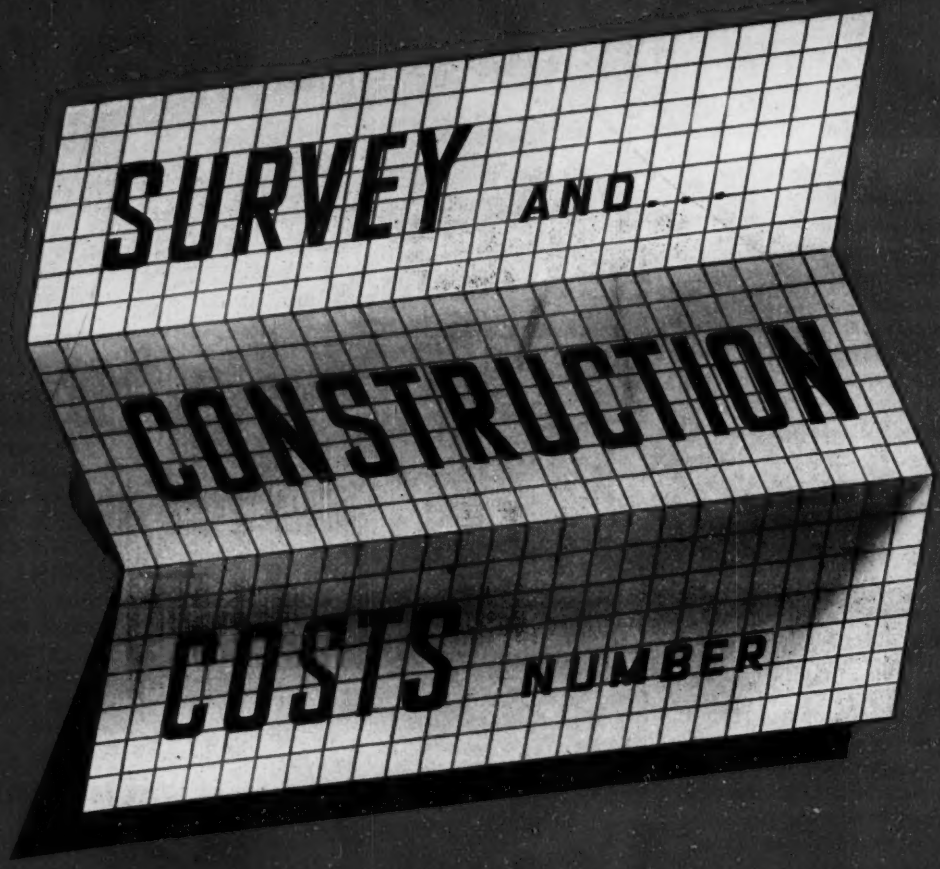
ENGINEERING NEWS-RECORD

MARCH 17, 1949



Review of Engineering Developments • Construction Facts and Figures
Status of Major Projects • Annual Construction Costs Summary

This plant gives maintenance a cold reception with

BYERS WROUGHT IRON PIPE

Eight to ten million pounds of food, drawn from growing areas from Virginia to Florida, will flow through the Skyland Processing Corporation plant at Henderson, N.C., this year. The two-story, 220 x 222-foot building has 120,000 cubic feet of cold storage area, 100,000 cubic feet of apple storage, and 400,000 cubic feet of processing area, where asparagus, broccoli, strawberries, green beans, peaches, apples, cauliflower, and brussel sprouts are quick-frozen.

The responsibility resting on the 186-ton capacity refrigeration system is obvious; operations must be continuous, and there is no leeway for shut-downs. With the aim of assuring maximum durability and dependability, Byers Wrought Iron pipe was extensively used by the contractor, Burge Ice Machine Company. Illustrations show applications in the compressor piping, and in the cooling coils.

The soundness of these specifications is confirmed by the record, for wrought iron has made history in similar applications. One concern rebuilt its plant, and found the 22 year old wrought iron direct expansion coils in such good condition that the pipe was re-used. Nineteen years later (after 41 years of total service) inspection showed the pipe still in excellent condition. Another concern reported its 45 year old wrought iron coils still serving. These are only two examples out of many.

The unusual service qualities of Byers Wrought Iron pipe come from the unique character of the material. Tiny fibers of glass-like silicate slag, threaded through the high-purity iron, halt and diffuse corrosive attack. The fibers also anchor the initial protective scale, which shields the underlying metal.

If you have any cooling installations in mind, ask for "WROUGHT IRON IN REFRIGERATION AND AIR CONDITICNING SYSTEMS." It will give you the full story.

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, Seattle, San Francisco. Export Division: New York, N. Y.

CORROSION COSTS YOU MORE THAN WROUGHT IRON

BYERS
GENUINE WROUGHT IRON
TUBULAR AND HOT ROLLED PRODUCTS
ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

SURE-GRIP—in grader and earth-mover sizes for maximum traction on drive wheels.

More grip for Graders

and Earth Movers, too!

JUST look at that o-p-e-n c-e-n-t-e-r self-cleaning tread and those massive lug bars and you'll see why Goodyear Sure-Grips deliver more traction than other off-the-road tires.

These husky job specialists are first choice with construction men. They give maximum grip, minimum slip—provide super pulling power—low-cost, long-life performance. Another reason why year after year, *more yards are moved on Goodyear off-the-road tires than on any other kind.*

Earth Mover All-Weather for drawn vehicles and general traction

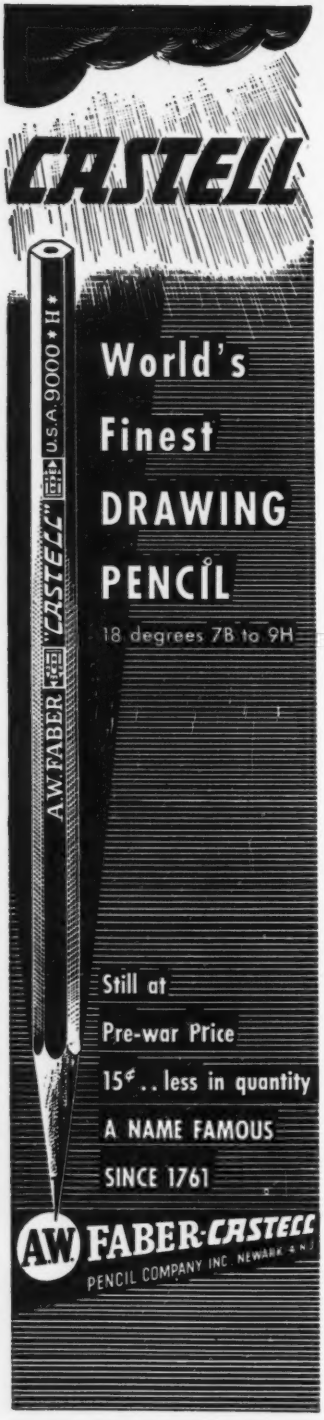
Hard Rock Lug for super-stamina in all rock work

We think you'll like "The Greatest Story Ever Told"—Every Sunday—ABC Network

Sure-Grip, All-Weather—T.M.'s The Goodyear Tire & Rubber Company

GOODYEAR

MORE YARDS ARE MOVED ON GOODYEAR OFF-THE-ROAD TIRES THAN ON ANY OTHER KIND



ENGINEERING NEWS-RECORD

VOLUME 142 — MARCH 17, 1949 — NO. 11

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

Survey and Forecast, 1948-1949

A detailed review of the performance and prospects of civil engineering and construction ..... p. 76

Construction Facts and Figures

A special insert of 16 pages, presenting graphically the volume of construction, cost and supply of labor and materials ..... opposite p. 97

Summary of Major Projects

An item-by-item account of the status of projects under way or planned in major construction fields ..... p. 113

Construction Costs for 1949

Statistics—Special articles on hospital unit prices; highway unit prices; postwar price experience on dams; labor productivity—Charts, tables and comparisons of recognized cost indexes—Materials prices; wage rates, depreciation rates ..... p. 159

DEPARTMENTS

Construction Week	65	Manufacturers' Activities	238
Editorials	67	Men and Jobs	248
News of the Week	71	Elections and Activities	261
New Products	210	Engineering Schools	270
Manufacturers' Publications	228	Obituaries	271

Construction Reports 321

Number of copies of this issue 44,362

Managing Editor—EUGENE E. HALMOS, JR.

Associate Editors—*New York*, V. T. Boughton (senior associate), F. S. Merritt, R. H. Dodds, J. C. Bumstead; *Cleveland*, J. R. Carr; *Chicago*, H. T. Perez; *San Francisco*, N. A. Bowers; *Washington*, V. B. Smith.

Assistant Editors—*New York*, T. D. MacGregor and Arthur J. Fox, Jr.; *San Francisco*, L. L. Wise.

Contributing Editor—Edward J. Cleary.

Business News—Elsie Eaves, *Manager*; J. A. Mahoney, E. R. Biggerstaff, M. W. Roessler, M. Wetzel, E. M. Huber.

Staff Assistants—Ethel Lyon, Louise Jacobson, Helen Chase, Elly Kirsten.

Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 71 cities in the United States, Canada and Mexico.

Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Buenos Aires. **Correspondents**—Athens, Rome, Caracas, Mexico City, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. BOGER,
Member ABC — **Publisher** — Member ABP

March 17, 1949 — ENGINEERING NEWS-RECORD — Vol. 142—No. 11

Publication Office—99-129 N. Broadway, Albany 1, N. Y.

Executive and Editorial Offices—330 West 42nd St., New York 18, N. Y.

Copyright by McGraw-Hill Publishing Co., Inc. All rights reserved.

Published every Thursday by the McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948) founder; JAMES H. McGRAW, JR., President; CURTIS W. McGRAW, Senior Vice-President and Treasurer; JOSEPH A. GERARDI, Secretary; NELSON BOND, Director of Advertising; EUGENE DEFFELD, Executive Assistant for Publications; J. E. BLACKBURN, JR., Director of Circulation. Cable Address, "McGraw-Hill New York." Address all communications about subscriptions to Director of Circulation. Price 35¢ per copy.

Subscriptions: (1 yr., 2 yr., 3 yr.) U. S. and possessions, $6, $9, $12; Pan America, $10, $16, $20; Canada $7, $11, $14; All others, $20, $30, $40.

Please indicate position and company connection on all subscription orders.

Entered as Second Class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of March 3, 1879. Printed in U. S. A.

SO — YOU WANT IT ON RUBBER?

You want a machine that will get around fast — a chassis that will stand crane loads and crane conditions — good looking — protection for craneman and driver — a machine you can be proud to put your name on!

But, you want the crane practical — easy to operate — easy to care for. The Northwest "Feather-Touch" Clutch Control and Simplicity of Design brings you that! You'd like to be rid of that jerky swing action that is present in so many truck cranes and is so hard on the carrier — the Northwest Uniform Pressure Swing Clutches take care of that.

You'd like to be able to have a live boom, quiet operation, easy visibility, longer cable life, easy convertibility to truck-shovel, -dragline, and -pullshovel — the Independent High Speed Boom Hoist, the Helical Gear Drive, modern cab design, the cushion clutch, ball or roller bearing on all high-speed shafts and other Northwest features. The Northwest Truck Crane gives you all this and more. — It's the smoothest, fastest truck crane on the market — a unit you can rely on in the heart of the job.

NORTHWEST
ENGINEERING COMPANY
1502 Field Bldg.
135 South LaSalle Street
Chicago 3, Illinois

only the best for the heart of the job

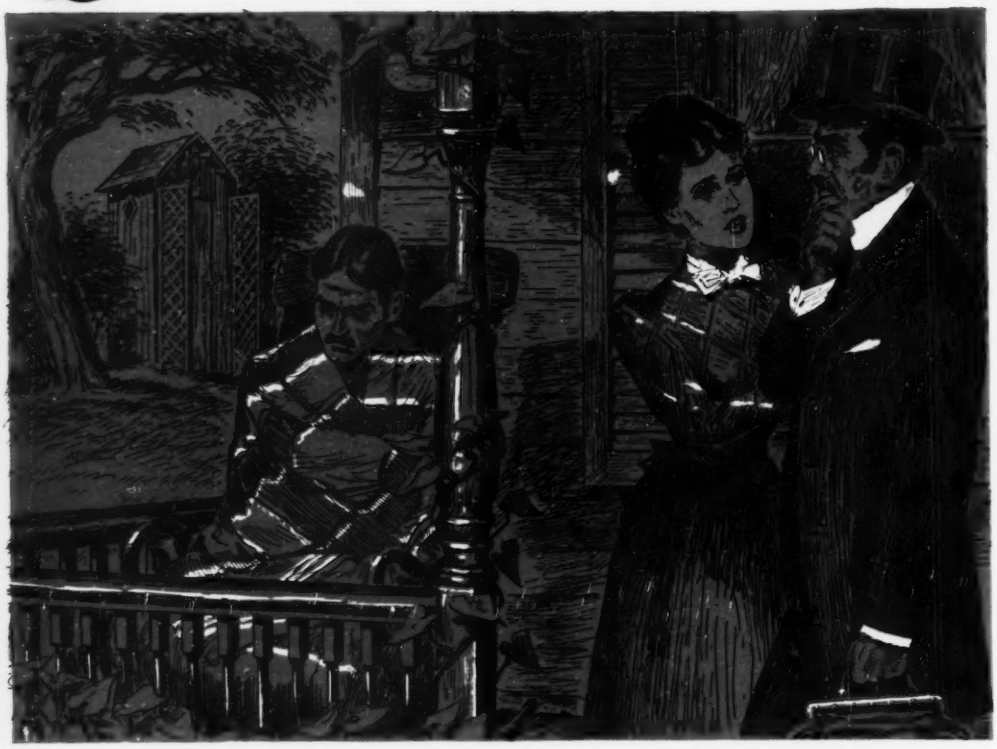
MAKE YOUR KEY MACHINE A REAL ROCK SHOVEL

PROFIT

NORTHWEST

CRAWLER AND TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

"But what ails Henry, Doctor?"



MAJOR credit for the virtual wiping-out of the typhoid fever scourge of 50 years ago is due to the growth and progress of public water works systems. In 1899, when our Company was established, there were about 3,000 public water works systems in America. Today, 12,000 water works furnish 85 million people with eight billion gallons of water per day, 90 per cent of which requires and receives treatment to make it safe.

The gas industry and sanitation have also made notable contributions to better health and living in the past 50 years. Today, over 20 million families use gas for cooking, refrigeration, or home heating. More than half of our urban population is now served by 6,000 sewage treatment plants.

As the largest producer of cast iron pressure pipe for water, gas and sewerage service, we too can look back on a half-century of progress in manufacturing methods, production standards, quality controls and facilities for research and development. The service records of our early product are truly remarkable. yet U. S. Cast Iron Pipe as we make it today is demonstrably superior – in strength, in toughness and in uniformity.

To those responsible for the great progress in water supply, gas and sanitation service and their contribution to better health and living over the past fifty years, America pays tribute.

U.S. CAST IRON PIPE

1899-1949

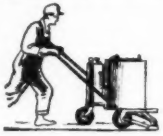
U. S. Pipe & Foundry Co.

Makers for 50 years of cast iron pipe for water, gas and sewerage service.

General Offices: Burlington, N. J.

JOIN UP WITH Flintseal

AND SAVE TIME, MONEY, AND TROUBLE!



Here's a friend that sticks! Through fair weather and foul. Under all kinds of conditions.

This rubber-bearing, thermoplastic compound seals joints smoothly, neatly, *positively*...and far outlasts old-fashioned materials.

1) Special equipment enables you to melt and pour Flintseal® quickly, safely, economically...and gives you a neat, smooth-riding joint.

2) Flintseal adheres to concrete with a tight, lasting bond, effectively sealing out moisture and other foreign matter that wreak havoc between and under the slabs.

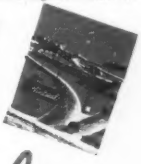
3) Flintseal stays resilient. It won't become brittle and crack in coldest weather, nor will it flow on hottest days.

4) Because of this *last'ng* resilience and adhesion, Flintseal maintains a tight joint throughout repeated cycles of expansion and contraction of the slabs.

Exceptionally satisfactory for sealing joints and cracks in concrete, Flintseal is finding wide use on municipal pavements, highways, airport runways and many smaller jobs in swimming pools, roofs, platforms and the like.

Get complete information on how joining up with Flintseal can save *you* time, money and trouble...by giving you a fast neat job, and cutting maintenance costs to the bone. Write today for your copy of the free folder illustrated. T. M. Reg. U. S. Pat. Off.

THE FLINTKOTE COMPANY
Industrial Products Division
30 Rockefeller Plaza, New York 20, N.Y.
ATLANTA • BOSTON
CHICAGO HEIGHTS • DETROIT
LOS ANGELES • NEW ORLEANS
WASHINGTON
TORONTO • MONTREAL



FLINTKOTE INDUSTRIAL PRODUCTS

Flintseal

HOT-POURED JOINT-SEALING COMPOUND

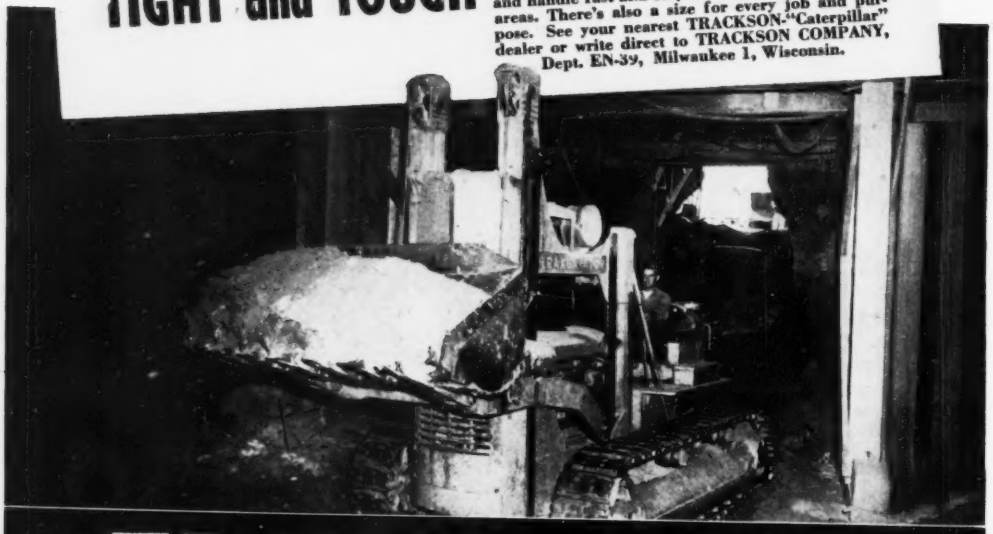
TRAXCAVATORS TAKE ON ALL COMERS

FREE and EASY

Versatile TRAXCAVATORS take every job in their stride. In the open — their speed and fast action are money makers. Digging, loading trucks, stripping, leveling or stockpiling. Cut the operating costs on your job to the nub — use TRAXCAVATORS!

TIGHT and TOUGH

For tough going — and tight squeezes — TRAXCAVATORS are compact, built close to the ground and handle fast and easy. Ideal for tight congested areas. There's also a size for every job and purpose. See your nearest TRACKSON-"Caterpillar" dealer or write direct to TRACKSON COMPANY, Dept. EN-39, Milwaukee 1, Wisconsin.

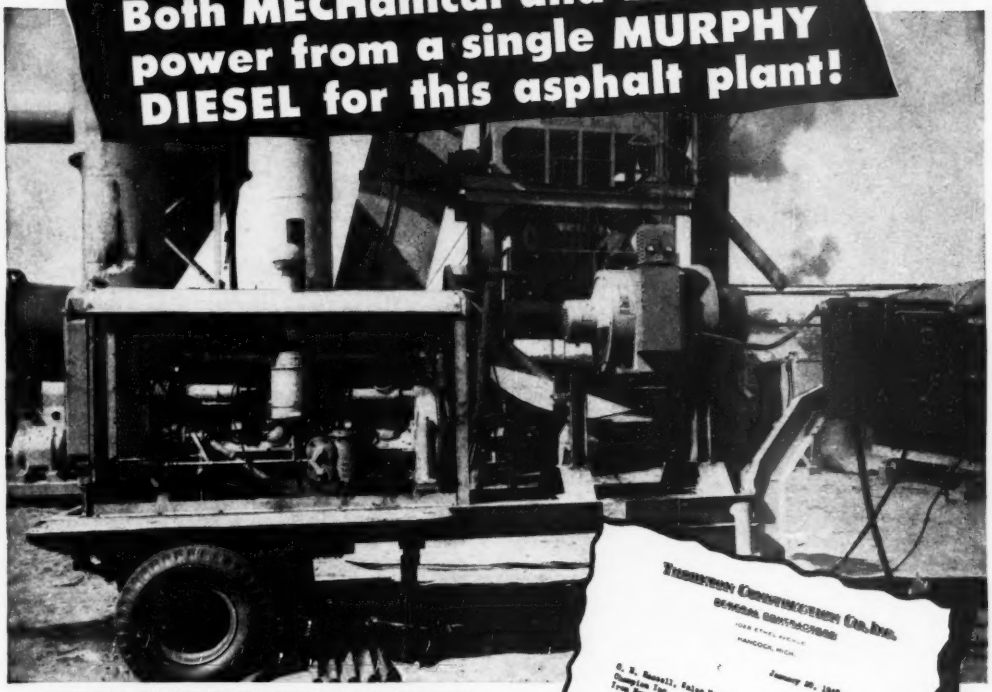


TRAXCAVATOR

REG. U. S. PAT. OFF.

THE ORIGINAL TRACTOR EXCAVATOR

Both MECHanical and ELECtric power from a single MURPHY DIESEL for this asphalt plant!



MURPHY DIESEL MECH-ELEC UNITS PROVIDE A COMPLETE POWER PACKAGE

FOR jobs where the advantages of a mechanical drive are necessary for the major load, but the flexibility of electrical power is desirable for secondary loads, Murphy Diesel now offers the MECH-ELEC Unit. A complete, packaged power plant, it is capable of delivering varying proportions of mechanical and electric power *simultaneously.* Electric power as required, up to 50 K.W., may be taken from the generator while the remaining unused portion of the engine's full rated power can be taken off the shaft mechanically. The generator can be operated without engaging the mechanical drive.

Two MECH-ELEC models are now available: The Model ME-6, rated at 135 H.P. continuous, 160 H.P. intermittent; and the Model ME-66, rated at 150 H.P. continuous, 180 H.P. intermittent. Both are equipped with 50 K.W. generators. The ratings indicate the total mechanical power available.

Ask your Murphy Diesel Dealer for full information or write direct.

January 20, 1949

C. E. Russell, Sales Manager
Chemetron Inc.
Iron Mountain, Michigan

Dear Mr. Russell:

Last spring we purchased from you a Murphy ME 66 Diesel Power Plant to drive our 2000 Gallon Portable Asphalt Plant. We drive the asphalt or 2000 Gallon Portable Asphalt Plant. We and dust collector which is driven by a 50 KW generator driven or. The collector unit is driven by a 25 HP electric motor. From each there on Diesel.

We were a little afraid we were expecting too much from the Murphy Diesel but we are pleased to say it completely filled our power requirements. The governor on this plant is completely satisfactory and the combination of Diesel and Electric Power is the ideal thing we have ever seen and is completely satisfactory. tor has made the plant more portable and is a desirable combination.

Yours truly,

CHEMETRON CORPORATION CO., INC.

P. E. Thornton, President

PET:ir

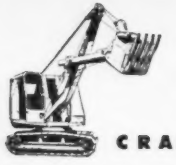
MURPHY DIESEL COMPANY
5311 W. Burnham Street
Milwaukee 14, Wisconsin

MURPHY DIESEL

Murphy Diesel Engine and Power Units, 90 to 190 H.P. Generator Sets, 60 to 116 K.W. Combination MECHanical and ELECtric Power Units, 135 to 180 H.P.

DEEP WIDE TRENCHES *Made Easy with a* BAY CITY HOE

This Model 65 Bay City hoe — working for the Leo Butler Co., of Silver Spring, Md., — digs trenches "dirt cheap" . . . moves plenty of dirt at a low operating cost. The sturdy, heavy-duty, well balanced construction of the crawler machine gives it full convertibility. Use it as a 20-ton crane or switch over to a 1¼ yard shovel. It's a versatile unit for any owner, offering many operating advantages. If you want excavating or material handling equipment that has stood the test of both job and time, buy BAY CITY. Write for descriptive literature.



BAY CITY

SHOVELS CRANES • HOES • DRAGLINES • CLAMSHELLS

BAY CITY SHOVELS INC., BAY CITY, MICHIGAN See your nearest Bay City dealer for excavating and material handling equipment in sizes from ⅜ to 1¼ yard with crane rating up to 20 tons. Both crawler and pneumatic tire mountings.

Oil Refinery Meets Diversified Piping Needs with RIC-WIL

INSULATED PIPE UNITS

Fuel Oil, Asphalt, Residue and Steam are Distributed Underground and Overhead at The Ohio Oil Company's Robinson, Illinois, Refinery in Ric-wiL Factory-Prefabricated, Pre-insulated Piping.

Refinery engineering and construction by Arthur G. McKee & Company, Cleveland, Ohio. Pipe line engineering and construction by J. F. Pritchard & Company, Kansas City, Missouri.

Standard 21 foot long Ric-wiL Units require only shallow, narrow trenches, even under railroad tracks.

The adaptability of Ric-wiL Insulated Piping Systems to any type of piping requirement is ably demonstrated by this refinery installation. It consists of ten separate runs of prefabricated pipe units employing a wide variety of pipe sizes and pipe arrangements for distribution of steam and viscous fluids at various temperatures.

The temperatures required for the distribution of the various viscous fluids are efficiently maintained in Ric-wiL Uniline Insulated Pipe Units. In this type of construction, pipes carrying oil, asphalt, etc., are nested with a steam tracer inside an insulation liner which insulates them from the exterior but not from each other.

At Ohio Oil, many different viscous fluids are carried in 4″ and 6″ pipes at temperatures ranging from 125° to 400°F. Steam for tracer lines and processing is distributed in pipes of from 1″ to 6″ diameter at 150 psi, 450°F.

Pipes and insulation are housed in helically corrugated, 16 gauge galvanized ingot iron Hel-coR conduit, ranging from 8″ to 21″ in diameter. The inherent flexibility and strength of this conduit permits underground installation with only 3′-5′ cover, even under heaviest ground loads. Overhead installations require a minimum of scaffolding and supporting structures. Units may be connected on ground before being lowered into trench or erected for overhead suspension. Entire piping systems are delivered completely prefabricated with all accessories—elbows, tees, anchors, expansion loops, etc.—ready for speedy, low cost installation.

Ric-wiL manufactures three basic types of Prefabricated Insulated Piping Systems—Hel-coR, Foilclad and Cast Iron Pipe Units. Pipe, insulation, and protective covering are factory-tailored to individual specifications to meet any condition or requirement for outside piping distribution. For descriptive literature, full information, write: The Ric-wiL Company, Department 12-D.

EUCLID SERVICE

Bottom-Dump Euclids have payload capacities of 13 to 50 cu. yds.—20 to 40-ton payloads . . . top speeds loaded up to 32.8 m.p.h. . . . powered by 150 to 275 h.p. Diesel engines.

Thanks to factory trained personnel in Euclid distributor organizations throughout the world, Euclid users are assured prompt and efficient service.

Engineered specifically for heavy off-the-highway use, "Eucs" are first choice for open pit mining operations, quarries, large construction and industrial jobs. Down-time and maintenance costs are kept at a minimum on these operations by service specialists and readily available supplies of Euclid parts.

EUCLIDS

MEANS MORE PROFITS!

Ruggedly built with plenty of power and stamina, Euclids have proved their staying power on the tough jobs. First in performance—First in service...a Euclid combination that adds up to customer satisfaction.

Euclids move more payloads at less cost. Specially trained service experts are in readiness to provide service to owners when and where it is needed.

Your Euclid Distributor or Representative will be glad to go over your job requirements and show you how dependable performance day in and day out, plus speedy on-the-job service, keeps Euclids rolling and job profits up.

The EUCLID ROAD MACHINERY Co.
Cleveland 17, Ohio

Rear-Dump Euclids, of 15 to 30-ton payload capacities, have body designs for low-cost hauling of all types of materials . . . wide range of travel speeds up to 35.4 m.p.h. . . . powered by Diesel engines up to 275 h.p. rating.

Move the Earth

Why some men make

IN TEXAS. Tom Popplewell, president of the Panhandle Gravel Co. at Amarillo, reports this Pioneer plant produces 125 yards of sized, washed material an hour. Pioneer equipment—a 1536 Jaw, a 40x22 Roll, a 4x12 Vibrating Screen, 48" Revolving Screen, 30" Feeder and Conveyors.

IN INDIANA. The Pipe Creek Stone Company located just outside of Sweetzer produced 100-125 tons of rock an hour with its Pioneer plant. A new Pioneer Jaw Crusher recently installed will reduce oversize . . . help produce more "pay" material.

IN WISCONSIN. Baraboo Concrete Products Company at Baraboo is getting 350 to 400 yards of clean sand and 110 to 200 yards of washed sized gravel a day with its Pioneer 305-W Washing Plant. This is their second Pioneer Washing Plant.

IN TENNESSEE. In seven months Charlie Langford's Pioneer plant at Cookeville produced over 250,000 tons of road aggregate and ag-lime. His other Pioneer plant located at Gallatin has produced over a quarter-million tons of aggregate and ag-lime in one year.

IN CALIFORNIA. Livingston Truck and Materials Co., near San Pedro, produces 300 tons of 1" minus granite an hour. Included in this big plant is a Pioneer 54 x 24 Roll Crusher, a 40 x 22 Roll Crusher, and a Pioneer 3042 Jaw Crusher.

IN ARKANSAS. The Bee Rock Quarry is producing specification rock for road construction at a 120 ton per hour clip. Pioneer equipment includes an Apron Feeder, 2036 Jaw Crusher, 40 x 22 Roll, 4' x 12' three deck Vibrating Screen, Conveyors and Storage Bins.

more money than others

IN OKLAHOMA. Mittry Brothers supply the big Hulah Dam Project with four sizes of washed specification material and sand. Pioneer Equipment includes an Apron Feeder, Jaw Crusher, Vibrating Screens, Triple Roll Crusher, Dehydrator, Bucket Elevator, Revolving Scrubber, and Storage Bins. Of course, all Conveyors were furnished by Pioneer.

BEHIND each one of these gravel and quarry plants, there's a very successful man . . . a man who has to be shown before he buys equipment.

In this space, we can show only seven such plants, owned by seven such men. But there are scores of others —in every part of the United States, in Mexico, Brazil, South Africa, Greece, the Philippines . . . all over the globe.

Why has PIONEER equipment won this world-wide acceptance and the "repeat orders" which prove its performance on the job? Because it *delivers*. PIONEER equipment is rugged, dependable, engineered for high production with minimum upkeep. That's why so many PIONEER plants dot the landscape.

As the leading designers and manufacturers of stationary quarry, gravel and washing plants, PIONEER engineers are extremely well qualified by years of experience to help you meet competition . . . produce material at the lowest possible cost.

If you're a man who'd like to improve his competitive position . . . who is tired of costly breakdowns, we'd like to tell you about the newest features of PIONEER plants. Just mail the coupon below, and we'll mail catalogs and literature.

PIONEER ENGINEERING WORKS
1515 Central Avenue • Minneapolis 13, Minnesota

BUY BOTH!

Higher Output, Lower Upkeep!

Pioneer

Continuflo **EQUIPMENT**

Pioneer Engineering Works
1515 Central Avenue, Minneapolis 13, Minnesota

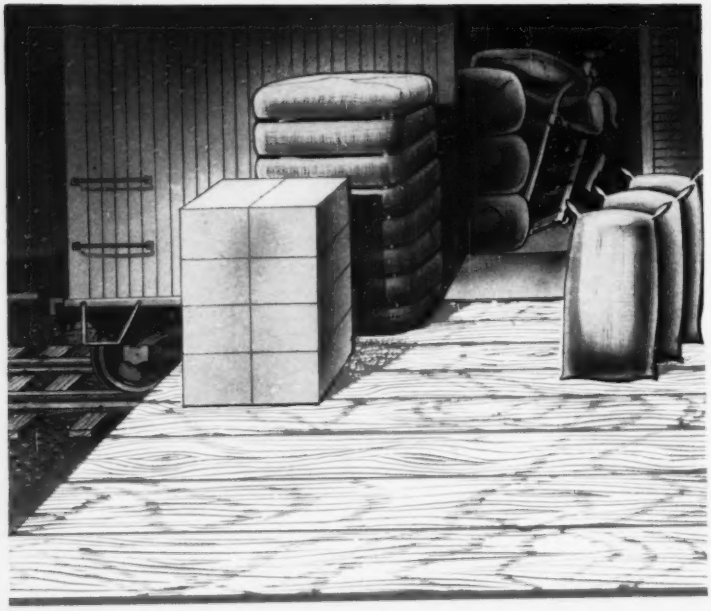
● Please send me information on the products checked below:

- ☐ Gravel plants
- ☐ Quarry plants
- ☐ Washing plants
- ☐ Conveyors
- ☐ Feeders
- ☐ Jaw Crushers
- ☐ Roll Crushers
- ☐ Vibrating Screens

Name _____

Address _____

City _____ *State* _____



Where Penta Makes Wood Last Longer

- Platforms and Decking
- Loading Docks
- Catwalks and Railings
- Ice Plants and Storage Houses
- Grandstands and Stadium Buildings
- Warehouses and Granaries
- Tool and Machinery Sheds
- Trestles and Bridges
- Guardrails
- Utility Poles
- Signs and Billboards
- Factory Flooring
- Sills, Plates, Joists
- Rafters and Roofing
- Sash and Doors
- Ladders and Stairs

PENTA CHLOROPHENOL preservative

(Monsanto's Santophen 20)

clean, long-lasting protection

Wood properly treated with Penta is CLEAN and STAYS CLEAN. It resists leaching even under conditions of high humidity or moisture; is paintable when formulated with suitable carrier oils. This non-bleeding quality of Penta is especially important where people or packaged goods come in contact with wood...It will not stain; has no objectionable odor.

Penta's high toxic value assures years of dependable protection against exposure, wood-rotting fungi, termites and other wood-boring insects. This toxicity never varies, since the chemical characteristics of Penta are always constant, always laboratory-controlled.

The Penta treatment, by either pressure or open tank method, is simple. To learn more about its advantages, send for your copy of a new Monsanto folder, "Monsanto Pentachlorophenol for Preserving Wood in Industrial Construction." Address MONSANTO CHEMICAL COMPANY, Desk C, Organic Chemicals Division, 1759 South Second Street, St. Louis 4, Missouri.

Santophen Reg. U. S. Pat. Off.

MONSANTO CHEMICAL COMPANY
Desk C, Organic Chemicals Division
1759 South Second Street, St. Louis 4, Missouri

Please send me a copy of your folder on Penta for Industrial Construction.

Name _____ Title _____

Company _____

Address _____

City _____ State _____

SERVING INDUSTRY...WHICH SERVES MANKIND

MONSANTO CHEMICALS AND PLASTICS

MARMON-HERRINGTON

All · Wheel · Drive

Big Trucks—and Small for Every Tough Job Call

In the Marmon-Herrington line you will find an *All-Wheel-Drive* truck—*with the right power, in the right capacity*—to fit every tough trucking job exactly, however big or small.

Marmon-Herrington offers twenty-two *All-Wheel-Drive* models in all. Four are heavy-duty models of the company's own manufacture; the balance are standard Ford models converted to *All-Wheel-Drive* by Marmon-Herrington. Wheelbases range from 110 inches to 220 inches—gross vehicle weights from 5,300 pounds to 42,000 pounds. There are 7 great engines, Diesel and gasoline—from 4 to 10 forward speeds, 1 to 4 reverse.

Live power and traction in all wheels—*front wheels pulling, rear wheels pushing*—give Marmon-Herringtons tremendous tractive power for toughest off-the-road operations . . . no mud too deep, no hill too steep, no going too rough and rugged. Let your Marmon-Herrington dealer give you an on-the-job demonstration of these great *All-Wheel-Drive* trucks. You'll witness an eye-opening brand of performance-ability.

MARMON-HERRINGTON COMPANY, INC. • INDIANAPOLIS 7, INDIANA

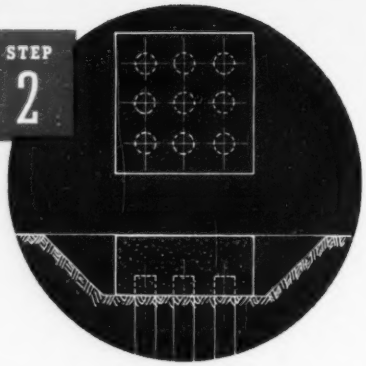
MARMON-HERRINGTON

All · Wheel · Drive

STEP 1

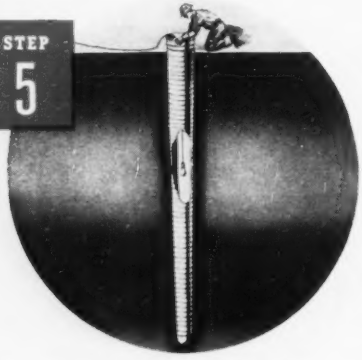
SUBSOIL INVESTIGATIONS... Raymond's exploratory soil borings provide engineers with reliable data for determining the best and most economical foundation design.

STEP 2



SPECIALIZED ENGINEERING ASSISTANCE... When requested, Raymond's highly trained and experienced engineering staff helps you to solve your foundation problems.

STEP 5



TIP-TO-TOP INTERNAL INSPECTION... After driving, the core is removed and the pile-shell is thoroughly inspected to assure a satisfactory form, free from water, mud or other materials.

STEP 6

FILLING PILE-SHELLS WITH CONCRETE... Raymond piles are completed by filling the shells with concrete. The shells protect the wet concrete, thereby assuring perfect piles.

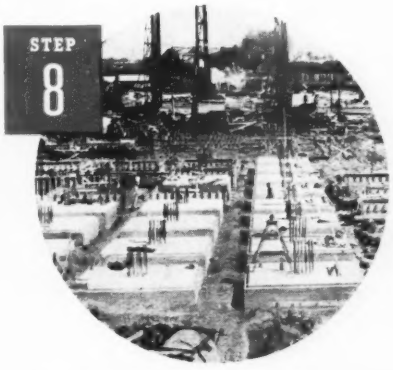
8 steps of Raymond service

These are the eight steps that comprise the tested and proved Raymond service—a service designed to meet your foundation requirements at minimum cost. No matter how large or how small your job may be, these eight steps are your assurance of the thoroughly dependable workmanship for which Raymond is internationally known. Your inquiry is cordially invited.

ASSEMBLING EQUIPMENT . . . The appropriate Raymond-built equipment located nearest the job is quickly assembled. Specialized equipment means efficient service.

DRIVING THE PILE . . . Raymond rigs drive each pile to the specified resistance. Soil pressures developed during driving are fully maintained.

LOAD TESTS . . . When required, the carrying capacity of the pile can be determined by applying a test load to one or more of the piles.



COMPLETED PILE FOUNDATION . . . A Raymond concrete pile foundation is permanent – with bearing capacity uniform and well in excess of specified requirements.

SCOPE OF RAYMOND'S ACTIVITIES

includes every recognized type of foundation construction—concrete, composite, precast, steel, pipe and wood piles. Also caissons, underpinning, construction involving shore protection, shipbuilding facilities, harbor and river improvements, and borings for soil investigation.

52 YEARS FOUNDED 1897 OF PROGRESS

RAYMOND

CONCRETE PILE CO.

140 CEDAR STREET • NEW YORK 6, N. Y.

BRANCH OFFICES: Boston, Syracuse, Philadelphia, Washington, Pittsburgh, Atlanta, Miami, Jackson, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America

NOW! SIMPLIFY EQUIPMENT MAINTENANCE

NEW Mobilube GX

HERE IT IS — One Great Gear Oil for All Axles and Manually Shifted Transmissions — Gives Top Protection Under Heavy Loads, High Speeds!

● New Mobilube GX Gear Oil (GX 80, GX 90 and GX 140) is especially made:

1. To eliminate the need for different gear lubricants for axles and manually shifted transmissions.
2. To end the danger of filling gear cases with the wrong type of lubricant.
3. To help protect gears from welding—corrosion—wear—throughout the entire range of loads and speeds.

New Mobilube GX combines the qualities of many individual gear lubricants. It affords exceptional protection for axle gears of the hypoid, spiral bevel, and double reduction types.

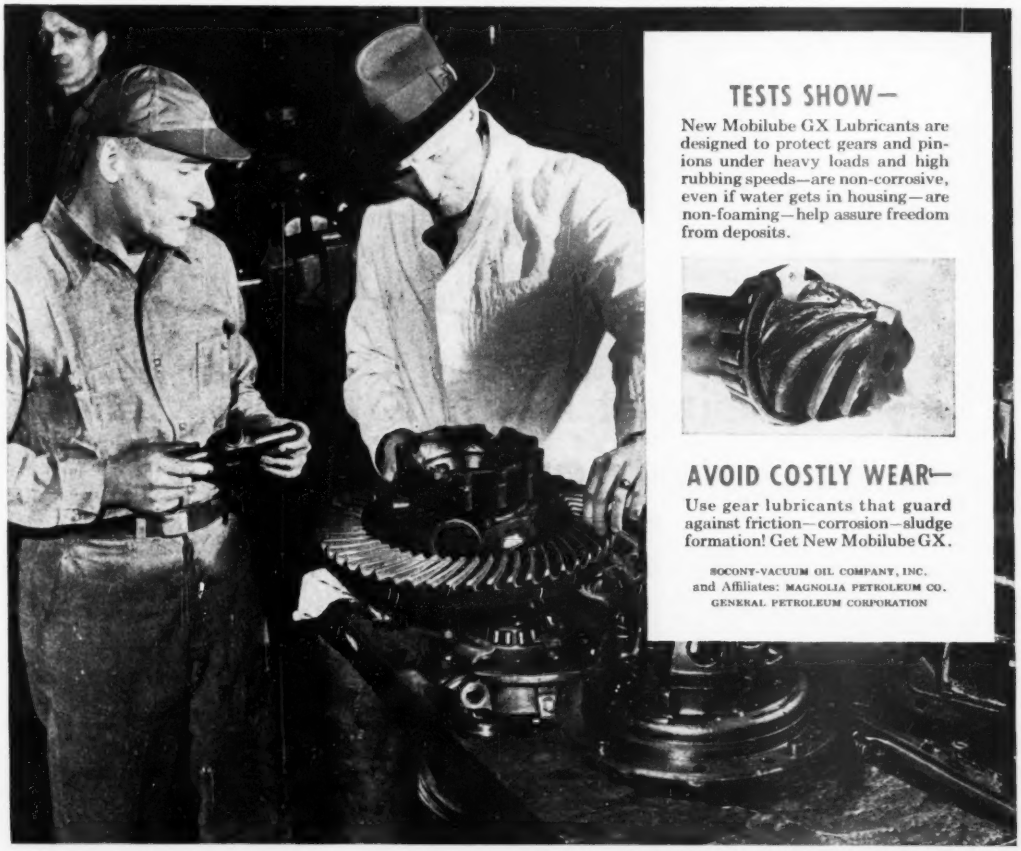
What's more, the same New Mobilube GX is recommended for all manually shifted transmissions, including passenger car overdrive types.

Simplify your lubrication set-up now. Get *Safe, Multi-Purpose* New Mobilube GX — qualified under U.S. Army Specification 2-105B. It will help keep machines on the job—speed work progress.

* * *

Your Socony-Vacuum Representative will be glad to give you additional information. Ask him about Socony-Vacuum's complete Contractors' Service.

WITH ONE MULTI-PURPOSE GEAR LUBRICANT!



TESTS SHOW—

New Mobilube GX Lubricants are designed to protect gears and pinions under heavy loads and high rubbing speeds—are non-corrosive, even if water gets in housing—are non-foaming—help assure freedom from deposits.

AVOID COSTLY WEAR—

Use gear lubricants that guard against friction—corrosion—sludge formation! Get New Mobilube GX.

SOCONY-VACUUM OIL COMPANY, INC.
and Affiliates: MAGNOLIA PETROLEUM CO.
GENERAL PETROLEUM CORPORATION

SOCONY-VACUUM

Contractors' Service

Keeps machines on the job...
Speeds work progress!

SOCONY-VACUUM

Hold Down Cost!

In Spite of Rising Expenses

The **ROCKMASTER** Blasting System

Stabilizes Over-All Costs!

Sounds incredible in the face of rising costs of labor and blasting supplies. But it *is* true! Quarries, mines, stripping operations and construction projects hold down over-all costs with the ROCKMASTER Blasting System. Here's a case in point:

One company with the tough job of blasting hard limestone figures it saves $20,000 a year through the use of ROCKMASTER. They do less drilling, use less equipment, and have boosted their daily tonnage by five hundred tons. What's more, they have cut vibration and noise to a minimum—of prime importance to a quarry located within city limits!

When Atlas pioneered ROCKMASTER, it introduced a new concept of blasting. ROCKMASTER is a blasting *system* based on the right explosive and method of loading . . . the proper spacing of holes . . . the selection of the right milli-second delays—all based on the kind of rock being blasted.

Call in your Atlas representative. He'll be glad to show you how ROCKMASTER can help *you* hold down your blasting costs.

"ROCKMASTER"—Trade Mark
Manasite: Reg. U. S. Pat. Off.

ATLAS EXPLOSIVES
"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

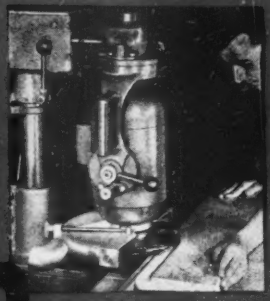
ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

More sawing every hour with RADIAL SKIL Saw!

Straight ripping or bevel ripping is easy with Radial SKIL Saw. The operator simply slides the material along the rip fence for accurate cuts.

Radial SKIL Saw does more in less time. There's no time lost cutting-up or changing jobs. All adjustments are made quickly and easily from the front. There's no support in your way. Radial SKIL Saw operates easily . . . with finger-tip control . . . means easier, faster production on all your jobs.

And Radial SKIL Saw is built to last. The best of materials . . . top engineering . . . finest design have been incorporated into every part . . . your assurance of long-lived low cost! Call Your SKIL Tool Distributor today for a demonstration.

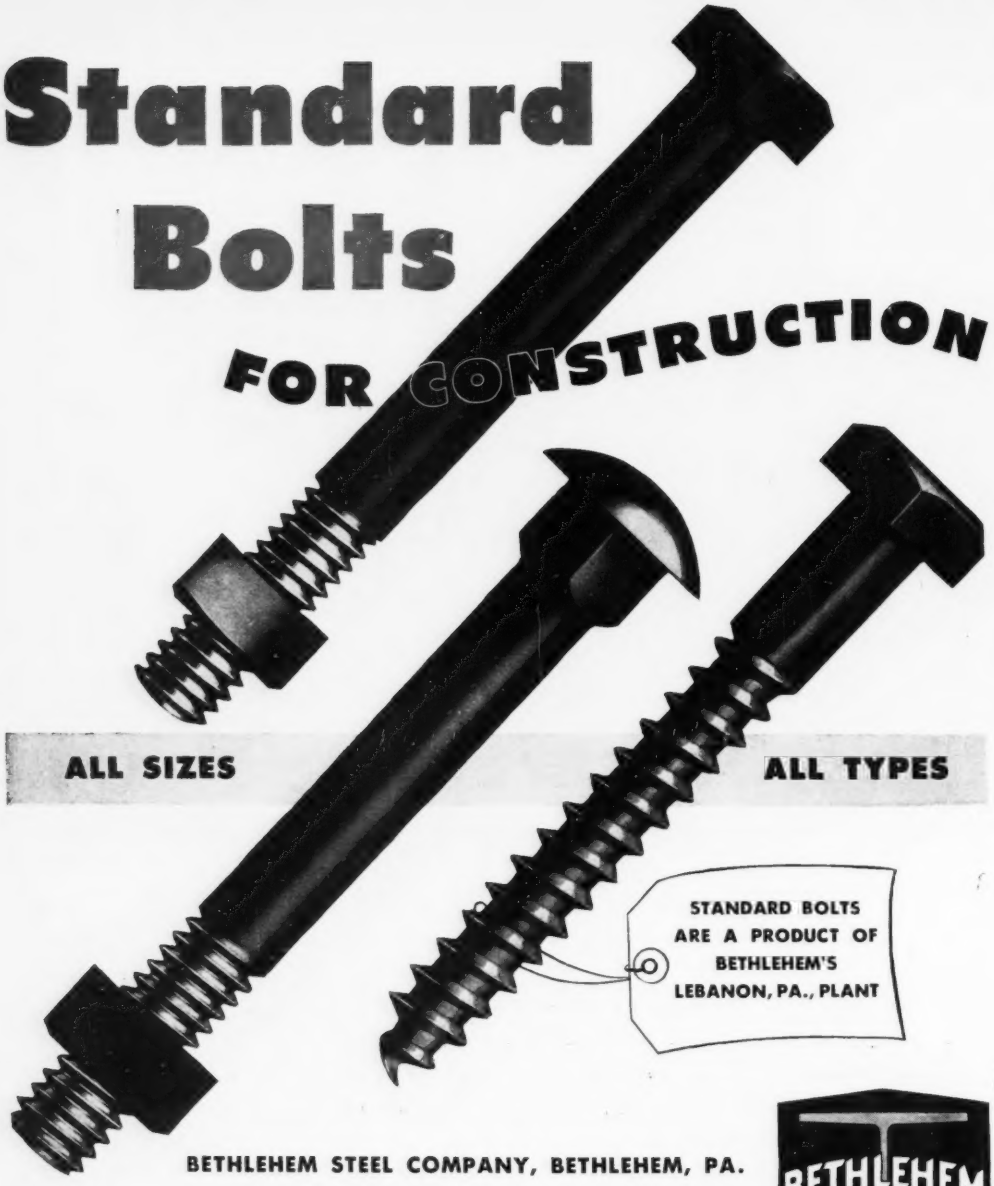


Roofing is another of the many cuts you can make with Radial SKIL Saw . . . and you can be sure that every cut is a precision cut every time!

SKILSAW, INC.
5033 Elston Avenue, Chicago 30, Ill.
Factory Branches in Principal Cities
In Canada: SKILTOOLS, LTD., 64 Portland St., Toronto, Ont.

SKIL ELECTRIC Tools PNEUMATIC
TRADE MARK

Standard Bolts FOR CONSTRUCTION



BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

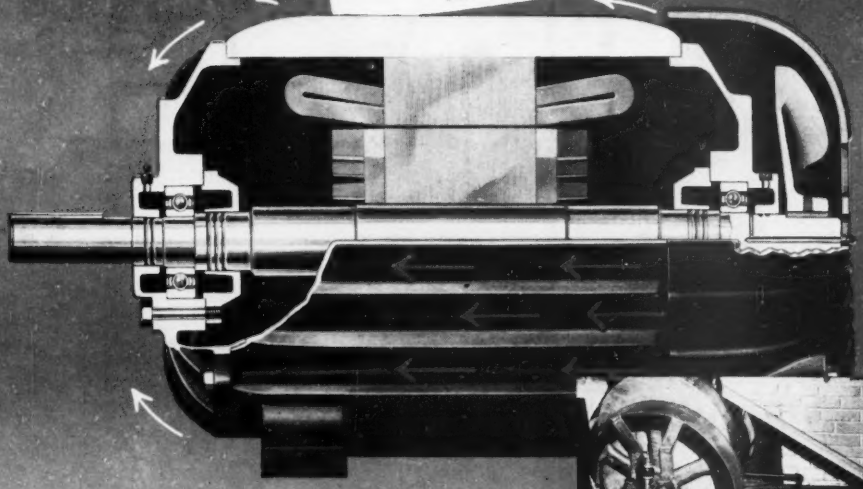
BETHLEHEM STEEL

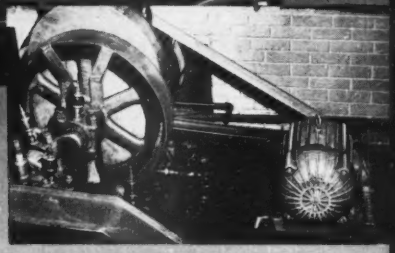
Other Bethlehem Construction Fastenings

TIE-RODS • SPIKES • RIVETS • TURNBUCKLES • CLEVISES

CROCKER-WHEELER Sealedpower MOTOR

TOTALLY-ENCLOSED . . . FAN-COOLED





Sealedpower Motor driving a vertical triplex power pump where moisture is excessive.

Saves 80% of Maintenance Costs

You can make maintenance savings of 80% and *more* with Crocker-Wheeler Sealedpower Motors. The secret? C-W dollar-saving design. No other totally-enclosed, fan-cooled motor has *exterior* cooling, with the fan-driven airstream blowing over a finned frame, carrying dust and fumes *outside* and *away*. (The outside fins that identify a Sealedpower Motor provide over 150% more cooling surface.)

But that's not all — this motor keeps cooler longer because it keeps cleaner. There's no place for lint or dirt to *collect* . . . nothing to hold heat *in*. Even on the really dirty jobs, a Sealedpower Motor will keep production going many times longer than "ventilating passage" motors, without a shutdown for cleaning.

For years of cool, clean operation and low maintenance cost, specify Sealedpower Motors. They're stock motors made for the toughest service. In new ratings from 3 to 60 hp.

Crocker-Wheeler Electric Manufacturing Company, Ampere 3, N. J. Division of The Joshua Hendy Corp., Branch Offices: Boston, Buffalo, Chicago, Cincinnati, Cleveland, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, San Francisco, Washington, D. C. Representatives in principal cities.

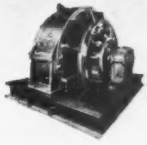
SEND FOR BOOKLET, "It's Different — it's a Dollar-Saver." Tells why the Sealedpower Motor will save money for you.

WHATEVER YOUR MOTOR REQUIREMENTS — CALL ON CROCKER-WHEELER

If Crocker-Wheeler builds it, it's a better built machine.

Horizontal and Vertical Protected-Type Induction Motors

A-C Generators and High Speed Synchronous Motors



Large D-C Motors and Generators

Turbogenerators

CROCKER WHEELER

ELECTRIC MANUFACTURING COMPANY, AMPERE 3, N. J.

Division of Joshua Hendy Corporation

POWER

Exide BATTERIES

bring *EXTRA* power to Diesel engine cranking

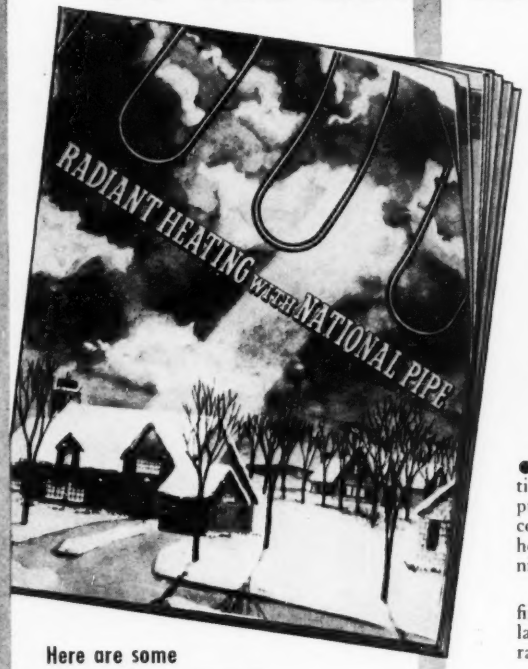
When Exide Batteries do the cranking, Diesel engines start. They're proving that daily on thousands of off-the-highway operations, in all parts of the world, and under all service conditions.

Exide Batteries surpass in this toughest of all cranking tasks because they're built specifically for the job. They are a development of an engineering and manufacturing skill gained from long experience in building batteries for hundreds of applications. You can always count on Exide Diesel Cranking Batteries for dependability, long life and low cost maintenance.

1888...DEPENDABLE BATTERIES FOR 61 YEARS...1949

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

DO YOU HAVE THIS FREE BOOK?



It tells what you want to know about

Radiant Heating

● This 48-page book, "Radiant Heating with National Pipe" is one of the most authoritative books published on the subject. It brings you a complete, comprehensive story of radiant heating and gives helpful information as a practical basis for the planning and installing of an efficient system.

Architects, heating engineers and contractors will find the book valuable for use in planning new installations. It answers many important questions about radiant heating. For example —

What is the approximate cost of a radiant heating system?

Would it cost more or less to operate a radiant heating system than other types, and by how much?

What effect do rugs and rug pads have on heat transfer in a radiant heating system?

These and many other questions are competently answered. This book also shows you how to calculate pipe sizes for various conditions. Mail the coupon and a copy will be sent at once.

Here are some of the subjects covered:

- What is radiant heating?
- How radiant heating is designed for comfort.
- How to estimate heat losses.
- How to determine radiant heating coil requirements.
- Radiant heating comfort chart.
- What heating engineers claim for radiant heating.
- Methods of floor and ceiling installation.
- Typical pipe coil patterns.
- Questions and answers on radiant heating.
- Heat transmission tables.

National Tube Company
Frick Building
Pittsburgh, Pa.

Gentlemen:

Please send me a copy of your FREE book, "Radiant Heating with National Pipe."

Name.....

Position.....

Company.....

Address.....

NATIONAL TUBE COMPANY, PITTSBURGH, PA.
COLUMBIA STEEL COMPANY, SAN FRANCISCO,
PACIFIC COAST DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

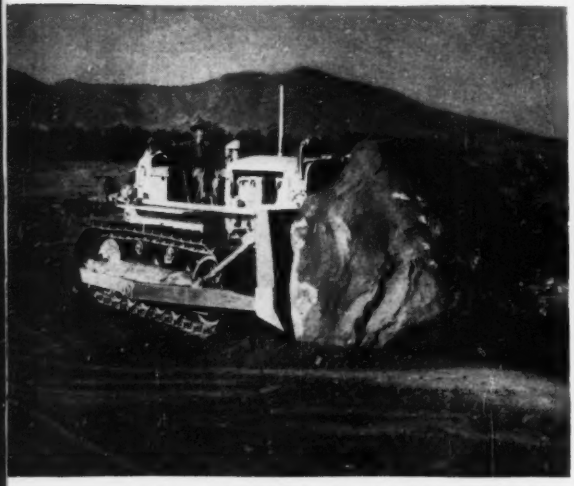
USS

NATIONAL Steel PIPE

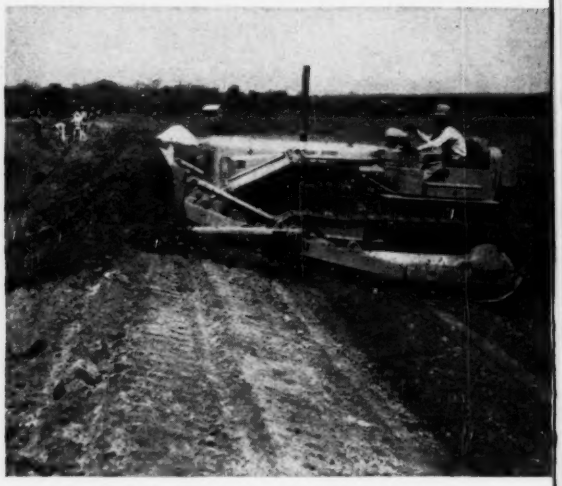
UNITED STATES STEEL

Changing the channel of the Yakima River, near Ellensburg, Wash., this "Caterpillar" Diesel D7, with No. 7S Bulldozer, works in 3 feet of water, doing a difficult job with ease.

On a highway job near Hampshire, Tenn., this "Caterpillar" Diesel D8 Tractor with No. 8S Bulldozer operated at 1½c per yard lower maintenance cost than a competitive tractor.



A "Caterpillar" Diesel D7 and No. 7S Bulldozer clearing rocky land for a citrus grove, Santa Paula, Calif. Operator says: "This is the neatest operating 'dozer I've ever worked with."



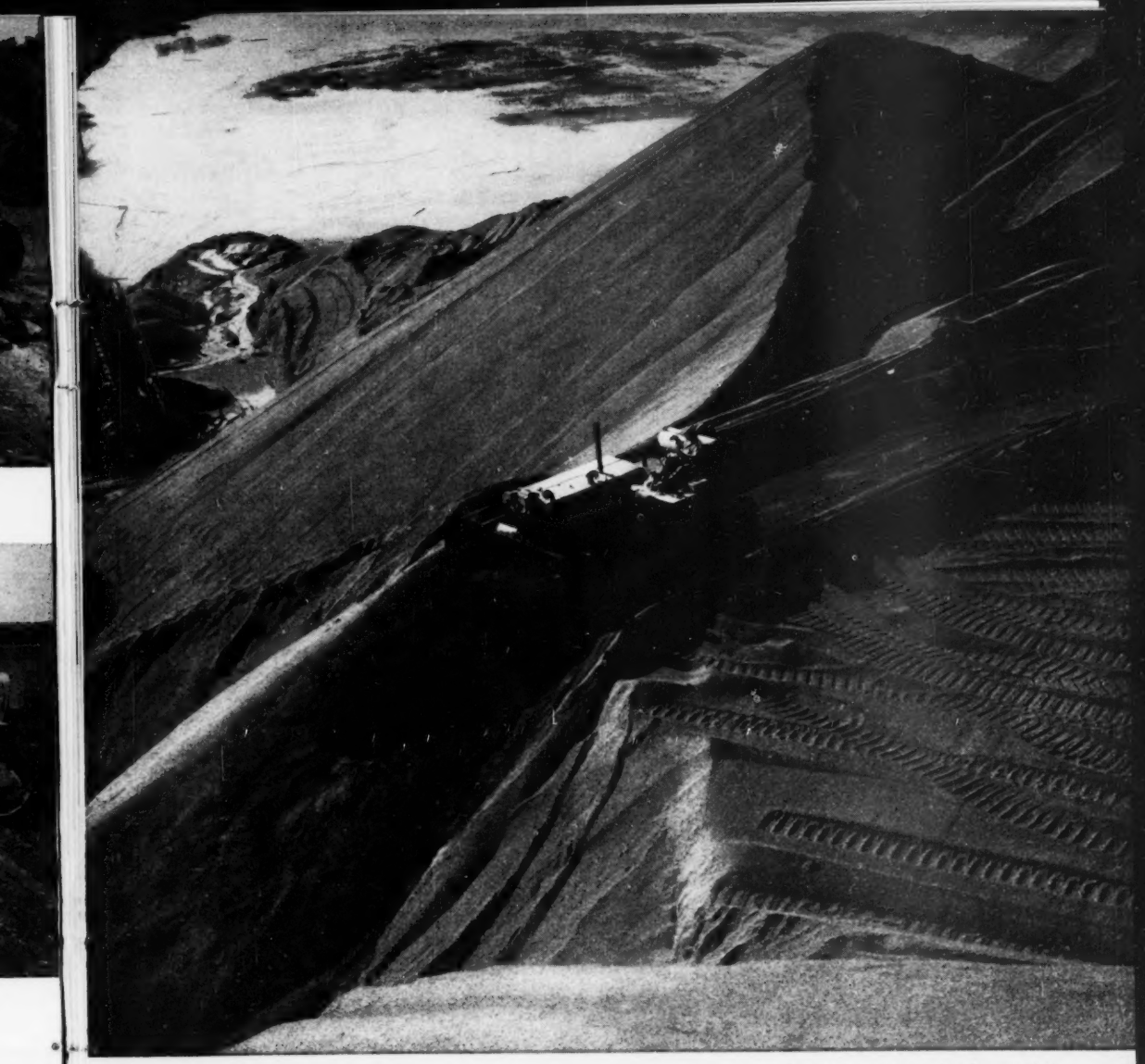
A "Caterpillar" Diesel D6 Tractor with No. 6A angling-type Bulldozer, is shown here building dike for a big new irrigation system in the Rio Grande Valley near Eagle Pass, Texas.

Top-Dog in the

Three years ago the "Caterpillar" Bulldozer entered the earthmoving picture. Since then thousands of contractors have used it on their jobs—proved its toughness—checked its big yardage and low operating costs. From coast to coast they talk about its ease of adjustment, its freedom from overhead structures, and the excellent rolling action that's built into the blade. Today, more than ever, this rugged unit is hailed everywhere as Boss of the Bulldozers.

Designed and engineered as perfect teammates for the power of "Caterpillar" Diesel Tractors, "Caterpillar" Bulldozers are now available in a complete line of both cable-controlled and hydraulic-controlled units. See your "Caterpillar" dealer for full particulars. He can also supply you with information on how these revolutionary 'dozers can be used with tractors of other makes.

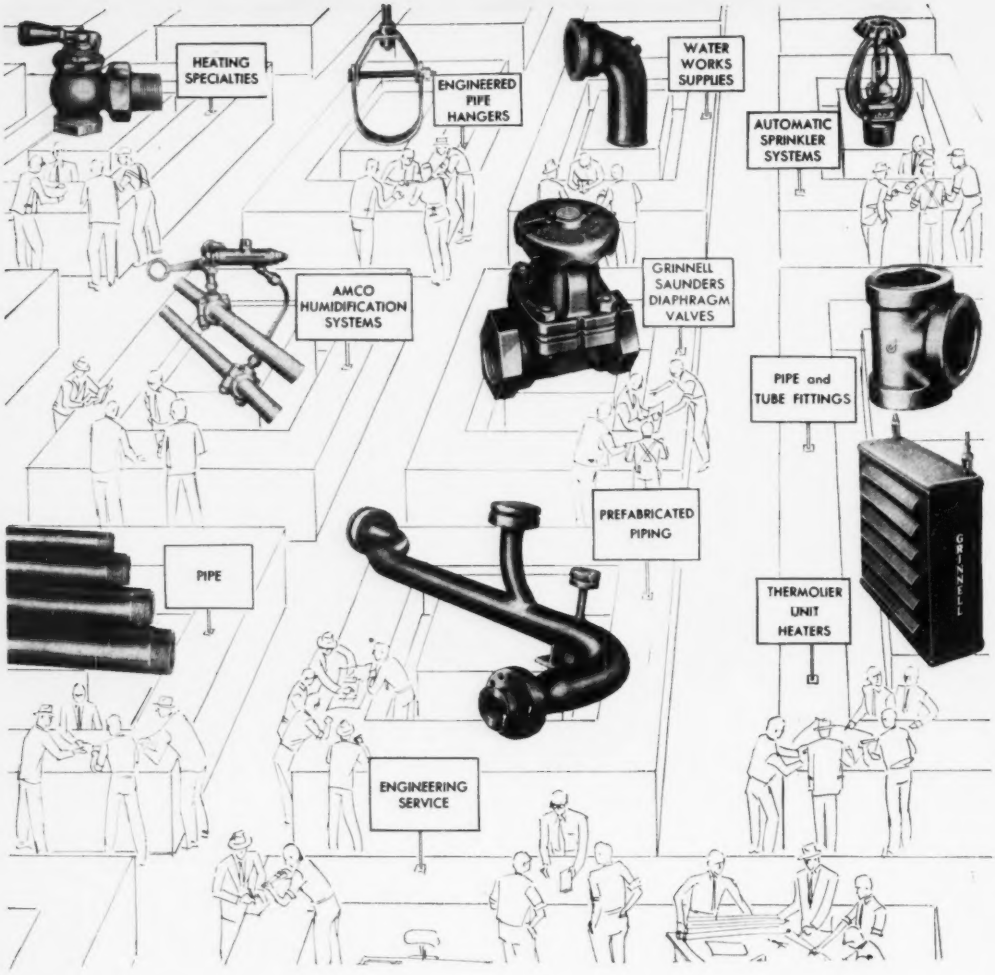
CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS



'Dozer field

This "Caterpillar" Diesel D8 Tractor with No. 8S Bulldozer handles 6000 to 8000 tons of sand and gravel daily at the Henry J. Kaiser plant, Pleasanton, Calif. Supt. B. F. Carter says: "'Caterpillar' equipment stands up better and does a better job. Wouldn't have anything else."

CATERPILLAR
REG. U. S. PAT. OFF.
DIESEL ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT



EVERYTHING FOR **PIPING** UNDER ONE ROOF

Shop for piping the easy way — call Grinnell. At each Grinnell warehouse a staff of experienced piping specialists is ready to help you with engineering assistance. Save time, save money, save the trouble of shopping around. Make a Grinnell warehouse your service center for everything in piping from a simple water connection to a 1500 lb. steam pressure line. No job too small, no job too large. Remember to call on Grinnell "whenever PIPING is involved".

99 YEARS PIPING

GRINNELL

Grinnell Company, Inc., Providence 1, Rhode Island. Branches: Atlanta • Buffalo • Charlotte • Chicago • Cleveland • Cranston • Fresno • Kansas City • Houston Long Beach • Los Angeles • Milwaukee • Minneapolis • New York • Oakland • Philadelphia • Sacramento • St. Louis • St. Paul • San Francisco • Seattle • Spokane

IT'S **P&H** FOR ADDED VALUES!

WHERE *"Swing Time"*

IS PAY-OFF TIME!

Yes, faster swing is the big pay-off when you operate a P&H Model 1055. Its *"Magnetorque" Electric Swing unit is 20% faster — delivers 5 cycles to 4 on other machines. It means more productivity — extra yardage that adds up fast.

It's smoother too — with velvety stops and starts that protect machinery against damaging wear. Simple, effortless control gives this big 3½ yard machine the easy operation that you normally associate with much smaller machines.

The best way to gain a comparison is to watch a P&H 1055 on the job. Drop us a line . . . ask for location of the one nearest you.

**THE P&H MAGNETORQUE transmits power for swing electro-magnetically. It does away with all frictions on swing and propel — eliminates the usual lines-outs for adjustments. The P&H Magnetorque lasts the life of the machine.*

P&H EXCAVATORS
4404 W. National Avenue
Milwaukee 14, Wis.

HARNISCHFEGER

On mountain-top mine, rubber strips 25,000 yards

It takes the agility of a mountain goat to set foot on Garfield Chemical Company's new phosphate mine at Diamond Fork Canyon, near Springville, Utah. Here, located at 8,000' altitude, a rubber-tired C Tournadozer climbed along steep, rock-faced slopes . . . shoved 25,000 yards off the mountain top in thirty-five 8-hour shifts.

8' Overburden Dozed an average of 175'

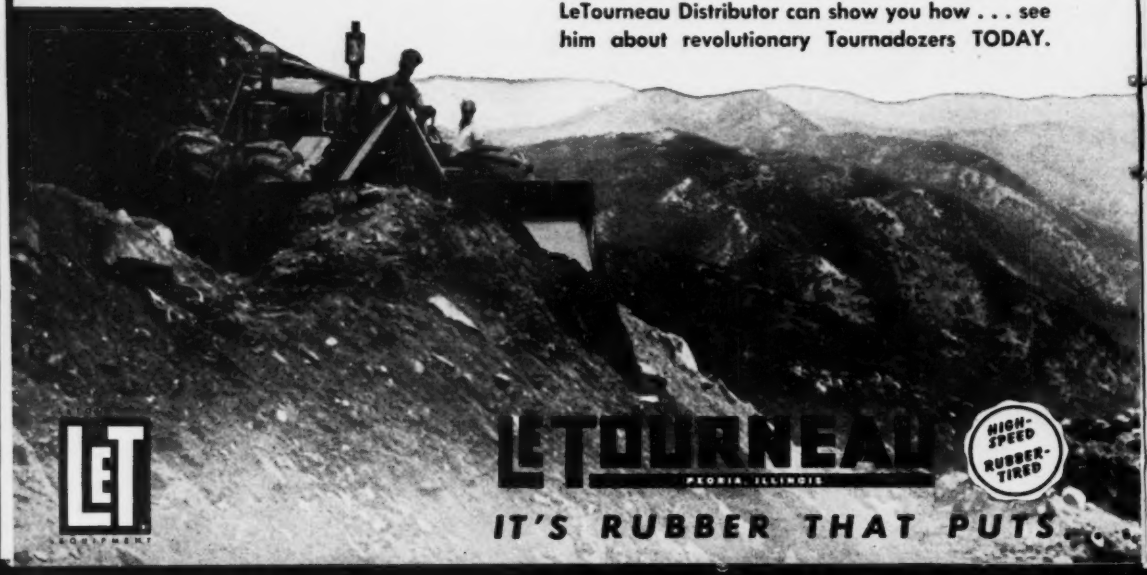
Overburden consisted of an 8-foot layer of heavy clay and imbedded boulders . . . last 18 inches above phosphate was an even tougher, semi-solid material. The entire 25,000 yards had to be moved an average distance of 175 feet. By handling all stripping in 281 work-hours, Tournadozer maintained an overall job average of 89 bank yards an hour. This checks with a time study on a 209-foot one-way shove, which showed the Tournadozer moved 76 bank yards an hour.

Dozed 2½ to 3 yds. each pass

On this work, Tournadozer's 180 "horses" and 4-wheel drive put plenty of power behind the big, rugged, 2½-yard blade to move oversize loads each pass. By dozing in a "slot", to minimize spill off ends of blade, operator often moved as much as 3 cu. yds. per load. Instant, "no-shift" selection of 4 forward speeds saved loss of momentum . . . let operator drift loads in higher gears. Reverse speeds to 15 m.p.h. cut non-productive time on return half of dozing cycle, for more passes per hour. Giant 21.00 x 25, low-pressure tires gave plenty of sure-footed traction on rocky ledges and steep inclines . . . powerful air-actuated brakes on all 4 wheels assured dependable, safe control at all times.

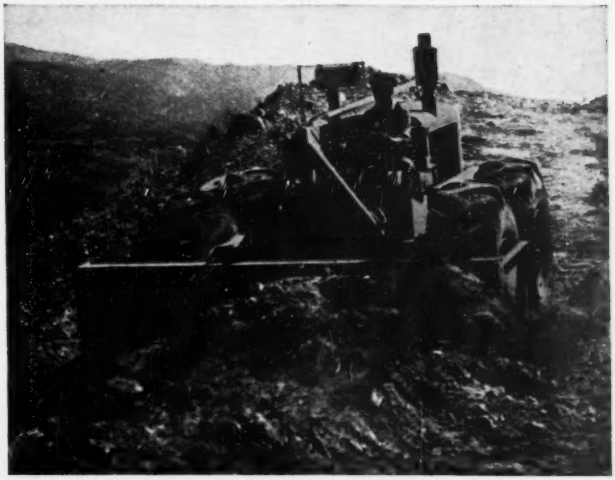
Other mining uses

This fast-working Tournadozer was operated by stripping contractors McFarland and Hullinger of Tooele, Utah, who also used it to sweep up the deposit face . . . and to feed blasted phosphate to loading plant. This same ability to move extra yards per hour . . . and handle extra jobs per year can increase *your* profits, too. Your local LeTourneau Distributor can show you how . . . see him about revolutionary Tournadozers TODAY.



-tired "C" TOURNADOZER

in 35 eight-hour shifts

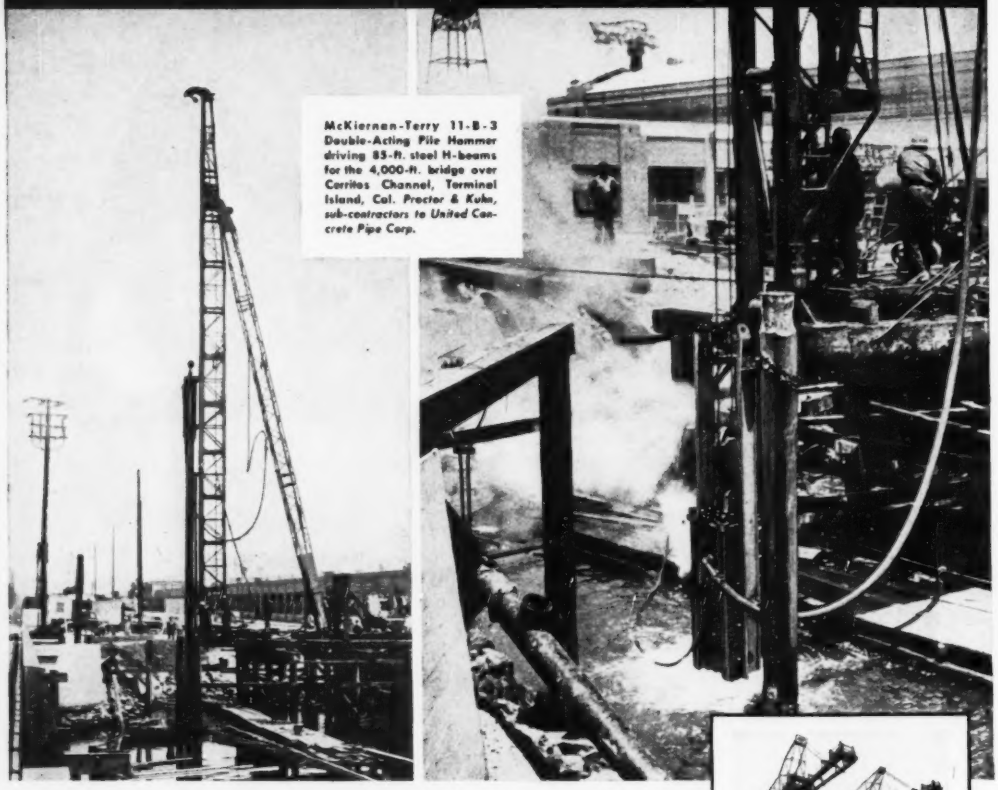


TOURNADOZERS

. . THE ACTION IN TRACTION . .

Tournadozer—Trademark

Driving 1170 Steel Piles Under Water



McKiernan-Terry 11-B-3 Double-Acting Pile Hammer driving 85-ft. steel H-beams for the 4,000-ft. bridge over Cerritos Channel, Terminal Island, Cal. *Proctor & Kuhn, sub-contractors to United Concrete Pipe Corp.*

This longest, highest vertical-lift bridge on the Pacific coast is a major traffic link in the Terminal Island Access Freeway, to relieve congestion on outlying highways and to speed traffic to the island Naval Base.

390 steel piles, 85 feet long, had to be driven full length into unstable soil to required elevation at cut-off 12 feet below the surface of the water, in addition to 780 shorter piles for the lift span piers.

McKiernan-Terry Double-Acting Hammers were the first pile hammers developed for underwater driving, and have held a reputation for underwater driving dependability through the years. That is why the 11-B-3 Hammer was chosen for this job.

Whatever the pile-driving problem may be, McKiernan-Terry offers the answer in a pile hammer line that includes 10 standard sizes in Double-Acting Hammers, 5 Single-Acting sizes and 2 Double-Acting Pile Extractors. MK-266

McKIERNAN-TERRY FACILITIES

McKiernan-Terry engineering skill and wide manufacturing facilities are used also in such products as bulk materials unloaders, coal and ore bridges, marine equipment, bridge operating mechanisms and other important machinery serving industry, transportation and the government.

FOR DATA AND SPECIFICATIONS write for McKiernan-Terry Circular #2, showing Double-Acting and Single-Acting Hammers in action.

McKIERNAN-TERRY CORPORATION • MANUFACTURING ENGINEERS • 13 PARK ROW, NEW YORK 7, N. Y.

McKiernan-Terry PILE HAMMERS AND EXTRACTORS

Now . . . after more than two years of actual field performance,

CARSET JACKBITS have proved that they can boost tonnage 20% or better and increase drilling speeds 50% or more!

No Matter How Hard The Rock, you can drill it faster, easier and cheaper with Carset Jackbits. Here are some of the reasons why—all of them advantages that you can prove to your own satisfaction, on your own jobs.

CARSET JACKBIT FEATURES

- Carset Jackbits wear longer
- Drill faster, 50% or more
- Boost tonnage, 20% or better
- Eliminate tapered holes
- Save up to 30% on dynamite
- Reduce air consumption at least 40%
- Permit use of longer steel changes
- Drill full steel changes without binding
- Permit use of lighter drills
- Practically eliminate bit changes
- Reduce maintenance costs, 30% or more
- Eliminate need for much shop equipment
- Drill the hardest and toughest rock
- Finish more rounds per month

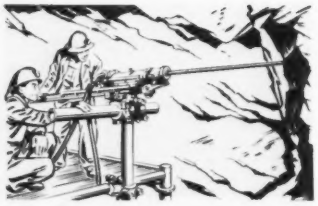
No wonder that operators call the Carset Jackbit

"the greatest single advance in rock drilling since the invention of the Jackhamer"

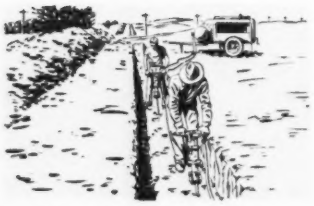
(see following pages)

RESULTS LIKE THESE WITH CARSET JACKBITS MEAN ONLY ONE THING:

a Complete rock drilling

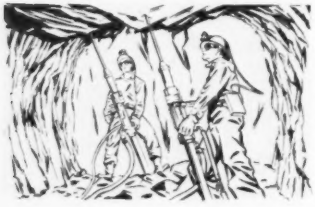


SAVED $92.69 PER FOOT OF DRIFT. In driving a 12 x 20 foot 97-hole heading in taconite, a mining company required an average of 49.8 hours to pull a 5-foot round. With CARSET JACKBITS they pulled 6½-foot rounds and cut this time to 18.5 hours. Accurate cost records showed a direct saving of $92.69 per foot of drift, or $602.48 per round.

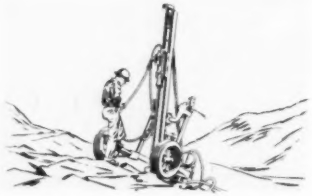


SAVED 65% ON BIT COST PER FOOT OF HOLE. On a large sewer project a contractor encountered tough drilling in hard, dense basalt. Steel bits used with J-50 Jackhamers averaged 1 foot of hole at a bit cost of 15 cents per foot. He now averages 260 feet per CARSET JACKBIT and bit cost per foot of hole is only 5¼ cents—a saving of 65% on ***bit costs alone***.

SIXTY PERCENT MORE PLUG HOLES PER DAY. In drilling large boulders for blasting in an open pit operation, Jackhamer operators increased drilling speed from 4 inches per minute with steel bits to 10 inches per minute with CARSET JACKBITS. This combination of higher drilling speed and the saving of time previously lost changing bits, resulted in 60% more plug holes per day.



REDUCED BIT AND ROD COSTS 40% PER TON OF ORE. A mining company using conventional steel bits with 98-lb. Stopehamers, reports that their cost of steel bits and rods was 46.4 cents per ton of ore. With CARSET JACKBITS, the cost was 27.8 cents—a direct saving of 40% in bit and rod costs. Additional savings were made in air consumption, drill maintenance, and man-hours.

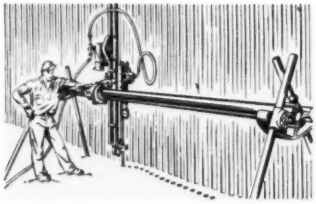


COULD HAVE SAVED $75,000 TO $100,000. A contractor on a dam project was drilling 18-foot holes in 66 minutes, with wagon drills and steel bits. With CARSET JACKBITS, he drilled 24-foot holes in 22 minutes—stepping up footage from 120 to 261 feet per shift. He said "If I'd had CARSET JACKBITS at the beginning of this job, I would have saved $75,000 to $100,000.

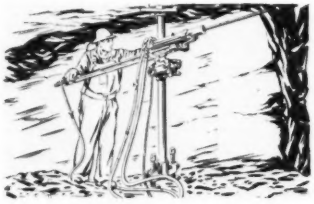
DRILL 300 FEET IN "6" ROCK." In a quarry, production costs were very high, due to extremely hard trap rock. This customer, using 45 lb. Jackhamers, reports that they required 4 steel bits for a 2-foot change. Now, with CARSET JACKBITS, he is averaging over 300 feet per bit! Rod life and drilling speed have been greatly increased and drill maintenance costs reduced.

No matter how hard the rock, you can drill it faster, easier and cheaper

Revolution in performance and costs!



RECONDITIONING COSTS PRACTICALLY ELIMINATED. A granite quarry previously using steel bits, found it necessary to run bit reconditioning equipment two 8-hour shifts per day. Now, with all drilling done by CARSET JACKBITS, this operation has been almost eliminated. The management has also cut out one drill altogether because the drilling speed was so much greater.



MINERS DRILL AND BLAST ON SAME SHIFT. A mining company, drilling in a very hard quartzite, reports that CARSET JACKBITS have completely revolutionized their mining procedure. Miners now put in their rounds so fast that they can blast on the same shift. With steel bits, blasting previously had to be done on the second shift. This customer has converted to CARSET JACKBITS 100%.

with Carset Jackbits

Long before the first CARSET JACKBIT appeared on the market, years of factory research and testing had proved what it could do. Results, even in the early development stage, were almost unbelievably good when compared to the performance of conventional steel bits.

Yet, today, these results have been far surpassed in the field. Today CARSET JACKBITS are out-lasting steel bits by 50 feet-to-one, 100-to-one, and in many cases by as much as 400-to-one!

These are **proven facts**—established beyond question by mining and construction operators who have been using CARSET JACKBITS on their own jobs, under their own widely varying conditions. In the opinion of these operators, the new I-R Super-bit has completely revolutionized the business of rock drilling.

On these pages, for example, are specific reports which typify the experience of hundreds of users. As more and more of these reports come in, it becomes evident that the CARSET JACKBIT will eventually make obsolete practically all steel bits—including most of our own. That means a revolution in our business as well as yours. But why not? Ingersoll-Rand has always sought to replace good products with still better ones. And the CARSET JACKBIT has **proved** to be a better product—radically better. That's why we have put it into full production—in a wide range of sizes to meet every rock drilling requirement.

CARSET JACKBIT
THE SUPER-BIT
SET WITH CARBOLOY INSERTS

manufactured exclusively by

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y.

CARSET JACKBITS are now available in a complete range of sizes for practically every drill and hole size.

The following **CARSET JACKBITS** will meet the requirements of practically every rock drilling job. Because there is no appreciable gauge loss, one bit size is all that is needed for any given application. With the exception of Quarrymaster Bits (which have side holes only) all **CARSET JACKBITS** have both center and side holes.

1⅜"
1 ⅜" 11XCS4

1⅜" dia., for Series 11 Jackstud. For use with Jackhamers as well as small-bore drifters Ideal for plugging and general small-hole drilling.

1½"
1 ½" 13XCS4

1½" dia., for Series 13 Jackstud. For use with all drills up to and including 3" bore machines.

1⅝"
1 ⅝" 13XCS4
1 ⅝" 15XCS4

1⅝" dia., for Series 13 and Series 15 Jackstuds. The series 13 bit for use with all drills up to and including 3" bore machines. The series 15 bit for use with all drills up to and including 3½" bore machines.

1¾"
1 ¾" 15XCS4
1 ¾" Ty1XCS4

1¾" dia., for Series 15 Jackstud and Type 1 Attachment. General-purpose bits for use with Drifters up to 3½" bore, Wagon-Drills, Jackhamers and Stopehamers.

1⅞"
1 ⅞" 15XCS4

1⅞" dia., for Series 15 Jackstud. General-purpose bits for use with Drifters up to 4" bore. Wagon-Drills, Jackhamers and Stopehamers. This bit can be used instead of the 1¾" size when extra chip clearance is required.

2"
2" Ty2XCS4

2" dia., for Type 2 Attachment. For the heaviest duty service, with 4" wagon drills and drifters. Also for blast hole drilling with Type 2 coupled steel.

2¼"
2 ¼" Ty3XCS4

2¼" dia., for Type 3 Attachment. For the heaviest duty service, with 4" wagon drills and drifters, where 2¼" bottoming size is required. Also for blast hole drilling with Type 2 coupled steel.

5¼"
5 ¼" QMX2S4

5½"
5 ½" QMX2S4

5¾"
5 ¾" QMX2S4

6"
6" QMX2S4

CARSET BITS are available in four sizes for use with the QUARRYMASTER DRILL. These machines are revolutionizing drilling procedure in quarries, strip mines and heavy construction work.

FOR THE COMPLETE STORY

Ask for our comprehensive pocket size catalog No. 4091. It tells the entire story. It contains numerous case histories and many helpful hints on how to get the most out of **CARSET JACKBITS.**

Ingersoll-Rand Company
11 Broadway, New York 4, N. Y.
Dept. RD-10

.... Please send me **CARSET JACKBIT** Catalog No. 4091

.... Please have **CARSET JACKBIT** representative call.

NAME.....

POSITION.....

COMPANY.....

STREET.....

CITY..... STATE.....

2

You can use **CARSET JACKBITS** with the new I-R **Jackstud Attachment** or with your present **Type 1, 2 and 3 Attachments**

Jackstud Attachments permit the use of superior nickel alloy drill steels. I-R Spec. No. 139. Operators report from 50 to 200% longer rod life. Jackstuds are available in Series 11, 13 and 15—with 11/16, 13/16 and 15/16 inch thread diameters respectively.

You can also use **CARSET JACKBITS** with your present Type 1, 2 and 3 Attachments (I-R threaded drill steel connections), which are giving such excellent service the world over. The performance of these rods with **CARSET JACKBITS** is even better than with steel Jackbits.

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, NEW YORK 368-15

A Million Yards a month

When you SPECIFY CUMMINS you get:

- Fast work cycles
- Fuel savings
- Low maintenance
- Minimum down-time
- Long engine life
- Warranty—100,000 miles or one year
- 'Round-the-clock service

CUMMINS DIESEL

SINCE 1918 PIONEER OF PROFITABLE POWER THROUGH HIGH SPEED DIESELS

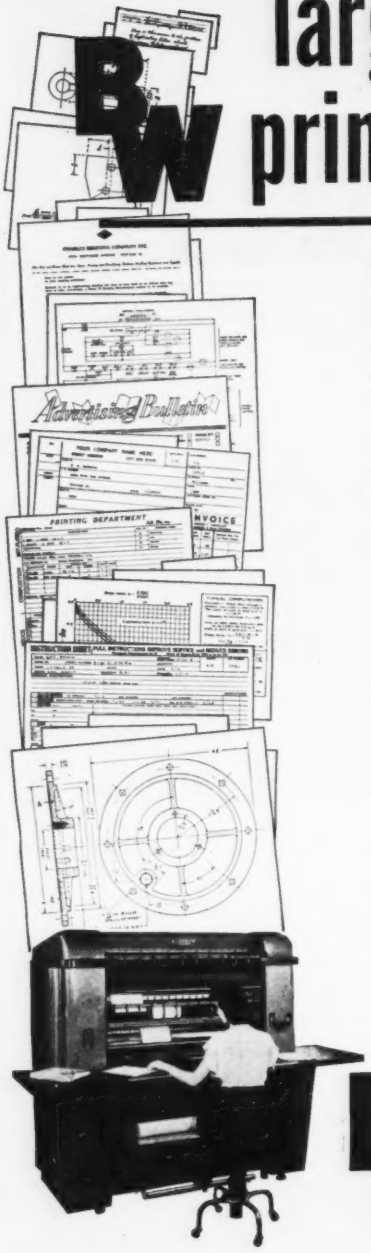
A million yards a month for six months—that's the earth-moving record of C. J. Langenfelder and Son, Inc., on the Baltimore, Md., Friendship International Airport job. And 23 Cummins Diesels helped set this record.

For example, 11 Cummins-Powered Super C Tournapulls made seven round trips an hour on a 1⅞-mile haul, carried 15-yard loads at top speed on soft sand. Cummins Power also proved itself on this job in Wooldridge Terra-Cobras, Euclid Bottom Dumps, Mack tractors, a Lima shovel, and a Euclid loader.

Write for more information about the proved performance and economy of Cummins Diesels.

CUMMINS ENGINE COMPANY, INC. • COLUMBUS, INDIANA

large volume print production



Never before has a single Whiteprinter been able to offer you all the advantages found in this new Volumatic Model 93. It is the last word in large volume production of high quality direct positive BW prints. Advance models of this machine have already proved that it can reduce reproduction costs . . . by faster production, less wastage, lower maintenance, simpler operation.

It has countless uses. The Volumatic, like other Bruning Whiteprinters, produces sharp, highly legible copies of engineering drawings and documents . . . in fact anything that is printed, drawn, written, or typed on a translucent medium. Its uses increase daily as more and more business and industries turn to Bruning Whiteprinters to eliminate the costly practice of transcribing documents, forms and records of all kinds.

It is extremely versatile. The Volumatic Model 93 takes cut sheets or roll stock with equal facility. It produces sharp BW prints from post card size up to 42-inches wide and unlimited length. You can have light, medium or card weight prints . . . prints on tinted stocks . . . prints on film or cloth . . . prints with colored lines.

Any one can operate it. The operation of the BW Model 93 has been simplified to the point where a girl can learn to operate it in less than an hour.

Faster operation. The new Volumatic produces BW prints up to 105 square feet a minute *at normal operating speeds.* The prints are delivered dry and ready for instant use, neatly stacked at the front or rear of the machine as desired.

Completely odorless. The developing solutions used to produce sharp clear Bruning Whiteprints are harmless and odorless. The machine does not require outside ventilation or exhaust ducts. It can be installed anywhere without offense.

It is mobile. There are no pipe or plumbing connections to tie this machine to one spot. It is built on casters so that it can be moved easily to efficient locations.

Uniform quality control. BW Model 93 automatically and instantaneously coordinates developing and printing speeds. Changes in printing speed never result in over-or-under developed prints. A further safeguard to quality is Bruning's built-in constant voltage transformer which assures uniform operation of the machine although line voltages may vary from 190 to 250 volts AC.

***Send today* for full information.**
Let us send you a complete file of literature describing the new BW Model 93 and the BW mediums you can use with it. See for yourself the extreme versatility, economy and speed of this machine. There is no obligation.

BRUNING BW WHITEPRINTER 93

VOLUMATIC MODEL

Other Bruning products you should know about—
Drafting Machines • Sensitized Papers & Cloth • Tracing Papers • Erasing Machines • Drafting Room Furniture • Slide Rules • Surveying Instruments • and many other products.

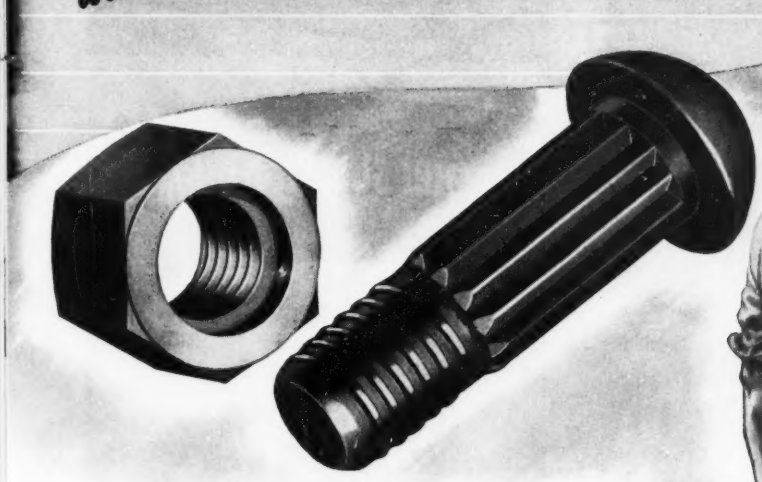
Charles Bruning Company, Inc.

4714-20 West Montrose Avenue, Chicago 41, Ill.

New York • Chicago • Los Angeles • and 11 other cities

Sturdy Steel Structures

with A MAN...A MAUL...A WRENCH!



"JUST DRIVE 'EM THROUGH AND TIGHTEN DOWN"

LAMSON *Dardelet* RIVET BOLTS

Just drive 'em through and tighten down! Two easy steps. That's all there is to the Lamson Dardelet Rivet Bolt method of steel construction.

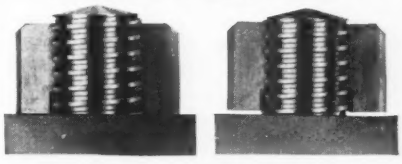
Yet tests have shown that the Dardelet Method is *far superior* in all important respects to hot riveting.

First, it costs *less* because Dardelet Rivet Bolts can be driven faster—*more* per day—and no expensive heating and driving equipment is required. Secondly, laboratory research proves that Dardelet Rivet Bolts provide stronger joints, higher resistance to vibration—plus shear and bearing values equal to those of power driven rivets or turned bolts in reamed holes.

The heavy splines on the bolt shank grip the steel and prevent turning while the Dardelet locking principle (see illustration) guarantees a sure-lock of the nut to the bolt.

Yes, you can simplify your steel construction, save money and get superior results by using Lamson Dardelet Rivet Bolts.

THE DARDELET LOCKING PRINCIPLE



LOCKED UNLOCKED

Distributed Exclusively By { **UNITED STATES STEEL SUPPLY CO.** SUBSIDIARY OF THE U. S. STEEL CORPORATION *Warehouses in Principal Cities*

THE LAMSON & SESSIONS COMPANY
1971 West 85th Street • Cleveland 2, Ohio
Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

• FURNITURE BOLTS • SEMI-FINISHED NUTS • LAMSON LOCK
STEP BOLTS • ELEVATOR BOLTS • STOVE RODS • TRACTOR BOLTS
OLTS • SPRING CENTER BOLTS • HUB and WHEEL BOLTS • CONNECTI
ONE NUTS • BARREL NUTS • OBLONG NUTS • CABINET BED BOLTS
S • PLASTIC INSERTS • EYE BOLTS • CLEVIS PINS • HINGE PINS •

SPECIAL PURPOSE Lamson+Sessions FASTENERS

UTS • C
UNCHED N
APPING SCR
WEATHER TIGHT BOLT
SCREWS • CAP SCREWS • FIN HEAD BOLTS

let LOCK JOINT solve your water supply problems

Lock Joint's four designs of reinforced concrete pressure pipe answer any problem in the field of large-diameter water supply conduits.

All of these designs may be equipped with Lock Joint's flexible, self-centering Rubber and Steel Joint, which simplifies installation and reduces the initial cost of laying the line.

Lock Joint Reinforced Concrete Pressure Pipe is made in all standard diameters from 16" up, and will withstand any pressure common to American water works practice.

* * *

Your inquiry at any of the Company's offices will receive a prompt reply.

LOCK JOINT PIPE COMPANY

Est. 1905

P.O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS
Wharton, N. J., Turner, Kansas

BRANCH OFFICES:
Cheyenne, Wyo. • Denver, Colo. • Kansas City, Mo. • Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. • Wichita, Kan. Kenilworth, N. J. • Hartford, Conn.

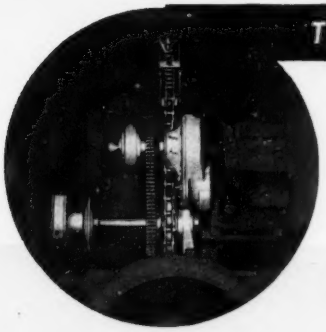
LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

SCOPE OF SERVICES

Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

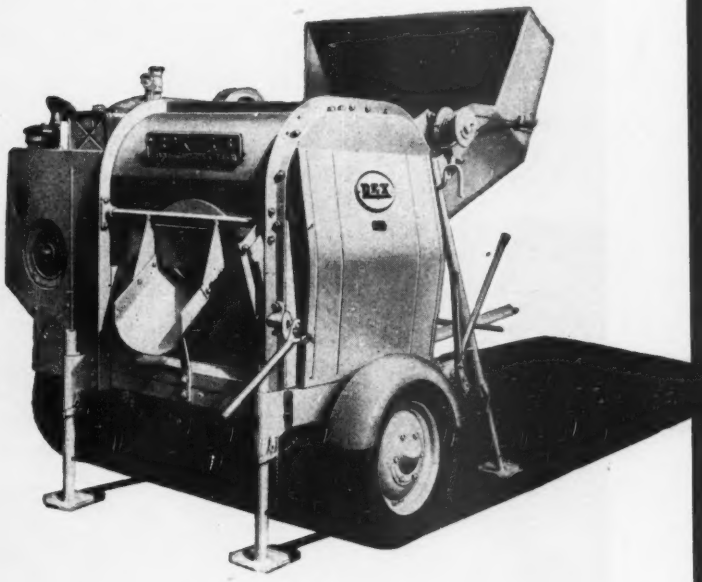
* * *

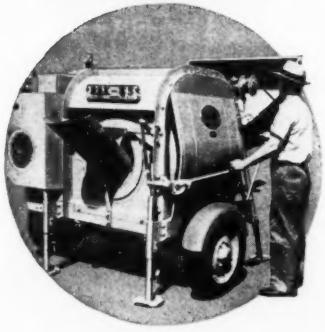
THE CHAIN TAKES THE STRAIN



The exclusive Rex Chain Drum Drive eliminates stresses and strains. The chain protects the transmission . . . gears . . . shafting . . . power plant. It eliminates binding between drum and transmission during the mixing action. And since the chain transmits power in the "up" direction, the load on the drum rollers is materially reduced.

the Mixers that give you MOST!





Lower Maintenance and Operating Cost

The Rex Chain Drum Drive permits weight to be properly distributed throughout the mixer for extra long life. It eliminates the need for bulky, excessively heavy transmission cases, shafting, bearings, etc. The weight saved here permits us to build added wearing life into parts where it is needed most . . . blades, drum rollers, drum shell and drum supports without sacrificing extreme portability. A Rex Mixer just has to deliver the lowest operating and maintenance costs of any mixer.

The REX "Easy Arc" Controls

Rex Mixers are designed to turn out *more* batches per day with far less manual effort. Operator can handle all controls from one spot. All have ample leverage . . . swing through short, easy arcs for safe, convenient, easy operation. For example, the discharge chute . . . it's outside the drum while mixing, and the operator just gives the lever an easy push that swings the chute into the drum. He doesn't have to lift a chute-full of concrete as is the case on the ordinary chute that's inside the drum during mixing.

There are a lot of other important "Plus" advantages of Rex Mixers. For all the facts, see your Rex Distributor, or write for your copy of Bulletin No. 47-10. Chain Belt Company, 1633 West Bruce Street, Milwaukee 4, Wis.

CHAIN BELT COMPANY

REX CONSTRUCTION MACHINERY

Super-Power

for Matchless Performance

There is No Substitute for All-Wheel Drive and All-Wheel Steer in a motor grader . . . no way in which any rear drive, front steer machine can equal the maneuverability, power-at-the-blade, and all-around performance of an Austin-Western "88" or "99".

With All-Wheel Drive, there are no idling front wheels—no dead front end to consume power and decrease operating efficiency. All weight is on driving wheels—front and rear—contributing 100% to traction and utilizing the full power of the engine.

All-Wheel Steer provides unequalled maneuverability; saves time on every job; makes it possible to work in places where ordinary motor graders cannot go—do things they cannot do.

Get the complete story of the many additional features of these outstanding graders from your A-W distributor, or send for the latest bulletins.

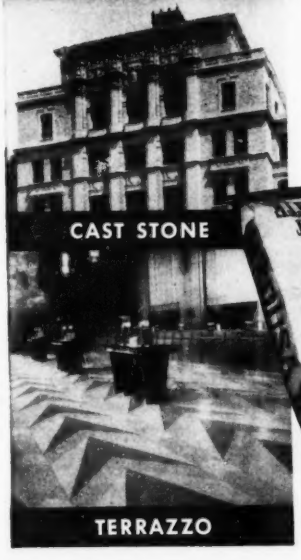
AUSTIN-WESTERN COMPANY, AURORA, ILL., U.S.A.

BUILDERS OF ROAD MACHINERY SINCE 1859

Austin Western

No one has ever been able to improve on

The WHITE *of* MEDUSA WHITE



T. M. Reg. in U. S. Pat. Off.

Over forty-two years ago, a Medusa scientist created the first white Portland Cement. Since then, many have tried but *no one has been able to improve on the whiteness or the quality of Medusa White.* Builders have chosen Medusa White thousands and thousands of times for buildings all over the world . . . under all climatic conditions. In every case, Medusa White because of its true white color has given complete satisfaction whether used white or tinted. Time has proved Medusa White the most dependable of all white cements. *There is no whiter white, no finer white than Medusa White!*

Medusa Waterproofed White is used by builders where lasting beauty and all weather protection is required. This is regular Medusa White Portland Cement with waterproofing ground in at the mill. This waterproofing material is in concrete, mortar or stucco *all the way through* and repels moisture *at the surface.* Thus dirt cannot stain and water cannot enter, freeze and disintegrate concrete or stucco made with Medusa Waterproofed White Portland Cement.

For sparkling white stucco, cast stone, terrazzo and other white concrete uses (floors, curbing, street and traffic markers) . . . for construction that will retain its beauty indefinitely, *use Medusa White.* And for the full story about the many uses of this remarkable cement, send the coupon for your copies of "A Guide to Finer Stucco" and "Medusa White Portland Cement."

"FIFTY-SEVEN YEARS OF CONCRETE PROGRESS"

MEDUSA PORTLAND CEMENT CO.
1001-2 MIDLAND BUILDING • CLEVELAND 15, OHIO

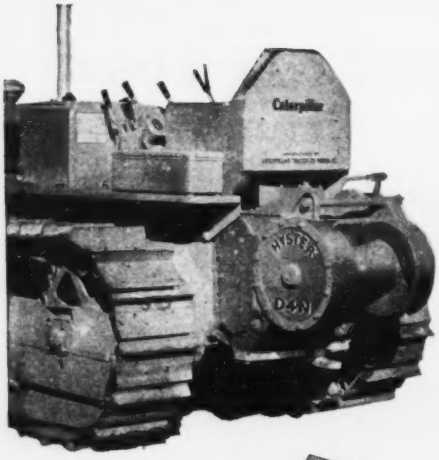
Gentlemen:
Please send me a copy of the booklets entitled, "A Guide To Finer Stucco" and "Medusa White Portland Cement."

Name .....

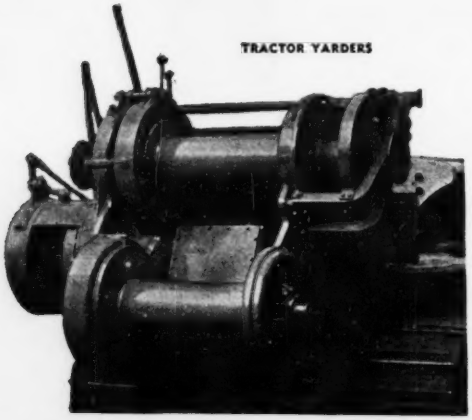
Address .....

City ..... *State* .....

Also made by Medusa Products Company of Canada, Ltd., Paris, Ontario



TRACTOR YARDERS



TOWING WINCHES

LOGGING ARCHES and SULKIES

29 Tractor Tools for greater work production

For almost 20 years Hyster has been making a full line of equipment for use with "Caterpillar" track-type tractors

The current line of 29 tractor tools includes towing winches, yarders, donkeys, cranes, logging arches, sulkies and the Hystaway — the revolutionary tractor tool that combines clamshell, dragline, crane and bulldozer, all tractor mounted.

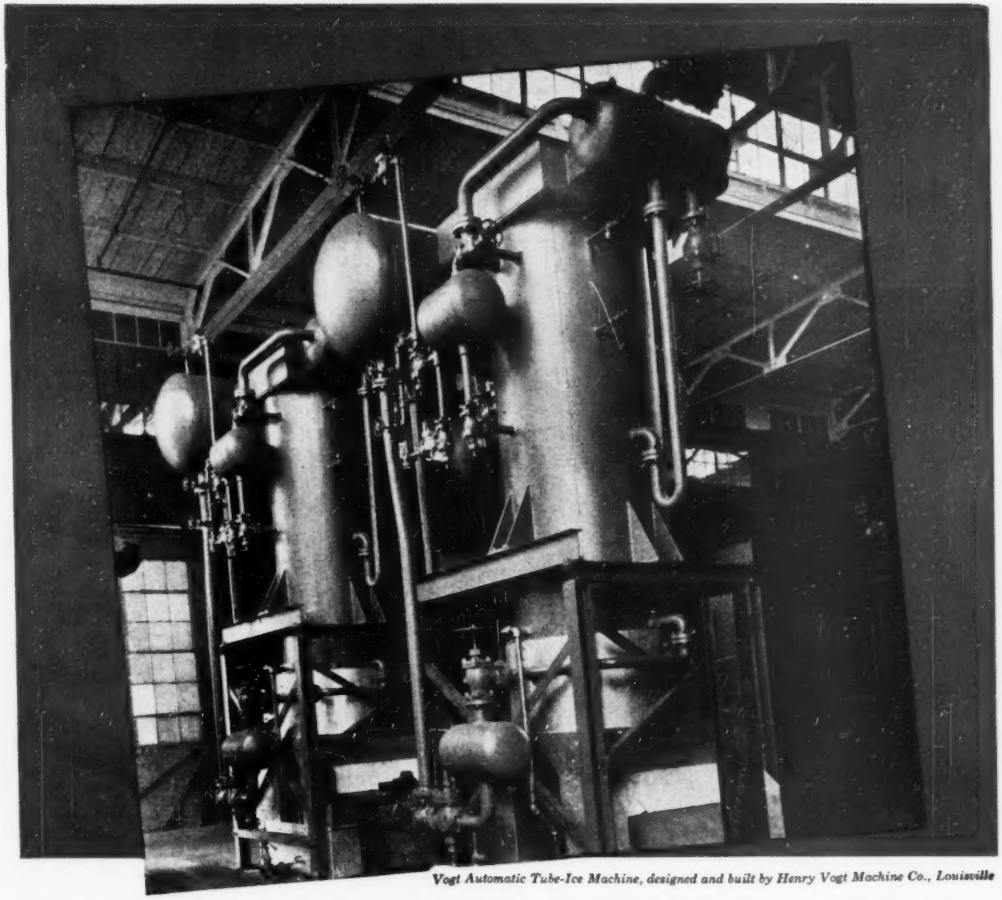
Your "Caterpillar" distributor sells and services Hyster tractor equipment. See him for information. Write for catalogs.

HYSTER

HYSTAWAY

HYSTER COMPANY

2953 N. E. CLACKAMAS ST., PORTLAND 8, OREGON
1853 NORTH ADAMS STREET, PEORIA 1, ILLINOIS



Vogt Automatic Tube-Ice Machine, designed and built by Henry Vogt Machine Co., Louisville

Hottest little ice maker

HERE is the greatest modern advance in ice making—the *Vogt Automatic Tube-Ice Machine* which eliminates all of the work, much of the power, and saves 90 per cent of the space used by can-ice plants for same capacity. It's a boon to hotels, restaurants, milk plants, packing houses, and other large users of sized ice. And it's another "natural" among applications for Tube-Turn welding fittings.

At points of direction change in the machine's piping system, the *fittings that become part of the pipe* assure permanently leakproof joints, and smooth flow. They help save that space, and weight. They help keep fabrication cost down because they're easy to connect, dimensionally accurate. Labeled "Tube-Turn", they're tops in every quality expected of welding fittings.

Got an equipment piping problem? You are invited to consult with Tube Turns' Engineering Service Division. Get in touch through your Tube Turns distributor. He is backed for service by the organization that's miles ahead in piping engineering.

TUBE TURNS, INC.

230 E. Broadway, Dept. E, Louisville 1, Ky.

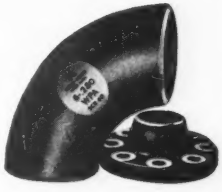
District Offices at New York, Philadelphia, Pittsburgh, Chicago, Houston, Tulsa, San Francisco, Los Angeles

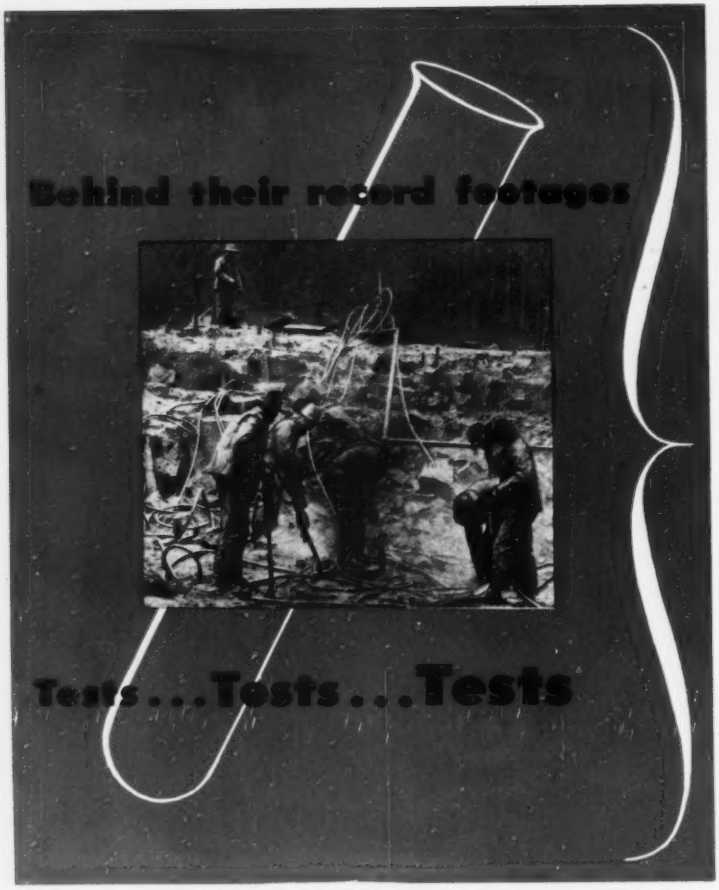
Write for data booklet, "Volumetric Capacities of Tube-Turn Welding Fittings."

TUBE-TURN

tt

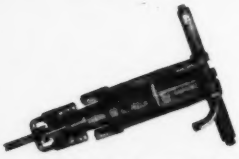
WELDING FITTINGS AND FLANGES





Gardner-Denver S33 — known as the most powerful 31-pound drill in its class.

Gardner-Denver S45 — a champion in soft and medium formations.



Gardner-Denver S55 — the most popular 55-pound sinker on the market.

Gardner-Denver S73 — 67 pounds of speed and power for the deeper holes, the hardest rock.

IT TAKES continuous testing to produce a champion. That's why these easy riding Gardner-Denver Sinkers—combining high speed, exceptional hole cleaning and powerful rotation—continue to pile up record footages even under grueling service conditions.

Skilled metallurgists test all raw bar stock and forging billets for alloy content and hardening ability. All finished pieces—designed for 100% interchangeability—undergo repeated fatigue, destruction and drill lubricant tests. And before shipment, every complete Gardner-Denver Sinker is machine tested to meet rigid performance standards.

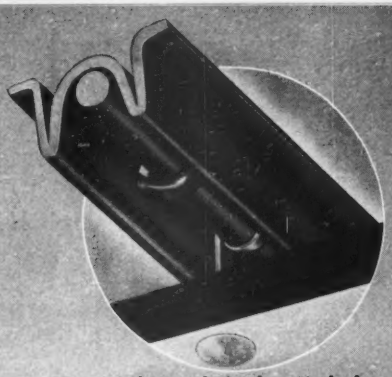
Remember, too, that Gardner-Denver field service is second to none. Branch offices—located all over the world—are staffed by factory-trained field representatives experienced in mining and construction work.

For complete information, write Gardner-Denver Company, Quincy, Illinois

GARDNER-DENVER SINCE 1859

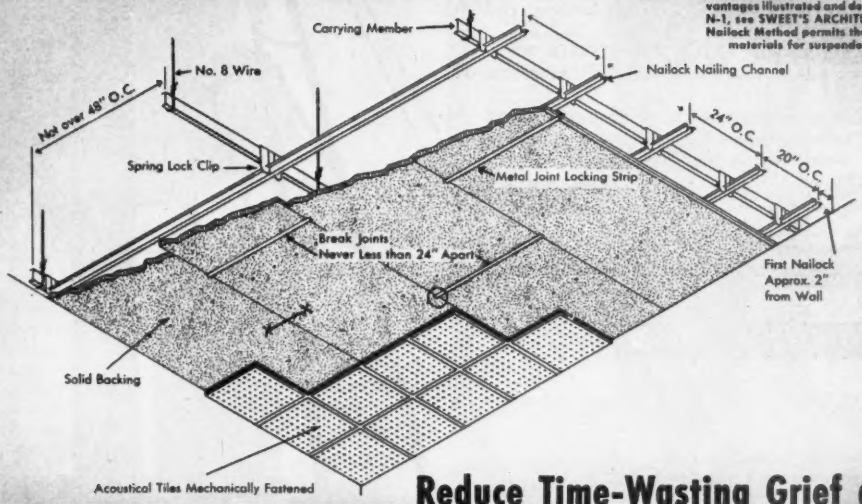
For Suspended Ceiling Construction

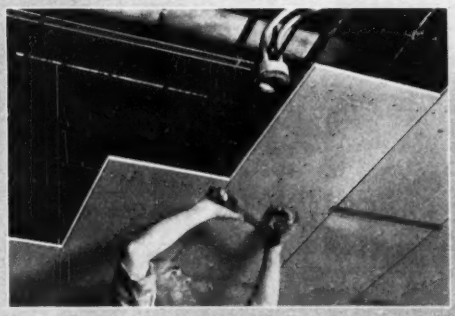
Use *Nailock*



Safest and Simplest Method

The Nailock Method is the simplest and safest method of installing a suspended ceiling with or without acoustical tiles. This method presents many exclusive advantages illustrated and described in Nailock Catalog N-1, see SWEET'S ARCHITECTURAL FILE, 11b/1. The Nailock Method permits the use of a wide variety of materials for suspended ceiling construction.





Permits Use of Any Acoustical Materials Required

Installation with Nailock requires only three operations. This shows nailing solid backing to Nailock Universal Nailing Channel with Nailock Nails which form locking loop around rod. Assures rigidity and permanency and safety.

Reduce Time-Wasting Grief and Time Costs on Suspended Ceiling Jobs

● Nailock Universal Nailing Channels provide a means for securely fastening every unit in place, and assure a rigid, safe and permanent suspended ceiling installation. It permits the use of larger crews in making installations in large areas due to the speed with which Nailock Universal Nailing Channels can be attached to carrying members and the simplicity of nailing backing or backerboard materials to these channels. The Nailock Method permits the use of any type of acoustical materials attachable by mechanical means, or by cementing, and all of the usual methods and materials of finishing a ceiling, including plastering. Refer to Nailock Catalog N-1 in SWEET'S 1949 ARCHITECTURAL FILE, 11b/1. Catalog available on request. Please use coupon.

NAILOCK STEEL DIVISION

THE SANYMETAL PRODUCTS CO., INC.

1704 URBANA ROAD • CLEVELAND 12, OHIO

Nailock Steel Division, The Sanymetal Products Co., Inc.
1704 Urbana Road, Cleveland 12, Ohio

Please send Nailock Catalog N-1 and name of nearest Nailock Distributor.

Name ..... *Position* .....

Company .....

Address .....

City ..... *State* .....

(Please attach to your business letterhead)

In all construction...

IT'S A CINCH WITH

TULSA WINCH

A Tulsa Winch on your truck will increase its working capacity, give trouble-free performance with dependability and SAFETY. Tulsa Winches are built in standard models, and in special electrical utility models for many uses . . . lifting, hauling, pulling, stretching cable, etc.

Tulsa Winch will HOLD THE LOAD. Men and loads are safe due to the positive exclusive back-off brake.

TULSA WINCH WITH EXTENDED DRUM SHAFT
Built to Specifications for Public Utility Companies. Note Detachable Cathead and Adapter. Write for Bulletin.

Tulsa Winch
TULSA, OKLAHOMA
DIVISION OF VICKERS Inc.

It's New!

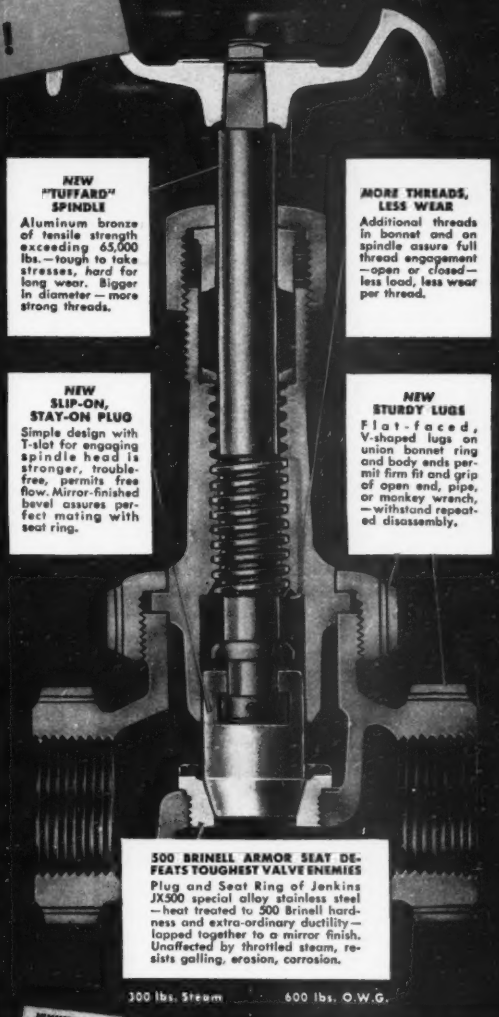
JENKINS ANSWER TO VALVE-KILLING SERVICES!

JENKINS Fig. 976-A

PLUG TYPE

Armor Seat

BRONZE GLOBE VALVE



NEW "TUFFARD" SPINDLE

Aluminum bronze of tensile strength exceeding 65,000 lbs.—tough to take stresses, hard for long wear. Bigger in diameter—more strong threads.

MORE THREADS, LESS WEAR

Additional threads in bonnet and on spindle assure full thread engagement—open or closed—less load, less wear per thread.

NEW SLIP-ON, STAY-ON PLUG

Simple design with T-slot for engaging spindle head is stronger, trouble-free, permits free flow. Mirror-finished bevel assures perfect mating with seat ring.

NEW STURDY LUGS

Flat-faced, V-shaped lugs on union bonnet ring and body ends permit firm fit and grip of open end, pipe, or monkey wrench,—withstand repeated disassembly.

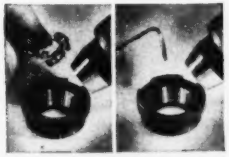
500 BRINELL ARMOR SEAT DEFEATS TOUGHEST VALVE ENEMIES

Plug and Seat Ring of Jenkins JX500 special alloy stainless steel—heat treated to 500 Brinell hardness and extra-ordinary ductility—lapped together to a mirror finish. Unaffected by throttled steam, resists galling, erosion, corrosion.

300 lbs. Steam 600 lbs. O.W.G.

BUILT TO BREAK RECORDS FOR LONG LIFE

Now, for the most severe services, you can choose the new Jenkins Fig. 976-A with complete confidence that it will set new economy records. Use it for pressure regulation, bleeds, drips, and drains, or any close regulation of steam that threatens wire drawing. It will lower maintenance, last longer, where entrapped pipe chips, scale, or rust tubercles are a problem.



SMASHED PIPE CHIPS, WIRE, LEAVE NO SCARS

Steel pipe chips and 1/16" wire rod, with Brinell hardness in excess of 300, were crushed between the new Jenkins JX500 Plug and Seat Ring without leaving a scratch or dent. That's proof of super hardness!

Compare Fig. 976-A, part for part, and see why it's as nearly wear-proof, trouble-proof, and maintenance-free as any stock valve can be. Only a few of the dozen ways it's better are shown here. Get the complete story in the new folder. See why it's unrivalled for endurance and economy,—why it's your best buy in plug-type valves! Use coupon.

Jenkins Bros., 80 White St., New York 13; Bridgeport, Conn.; Atlanta; Boston; Philadelphia; Chicago; San Francisco. Jenkins Bros., Ltd., Montreal.

LOOK FOR THIS TRADE JENKINS MARK DIAMOND MARK

SINCE 1864

JENKINS VALVES

Types, Sizes, Pressures, Metals for Every Need

GET COMPLETE DETAILS—IN THIS NEW FOLDER

Mail Coupon Today!

JENKINS BROS., 80 WHITE ST., NEW YORK 13

Please send Armor Seat Valve folder—Form 193

Name .....

Company .....

Address .....

.....

After holing through, Supt. Sam Allen (right) on Brooklyn side greets Supt. Andy Amisano and General Supt. Harry Stripling (left) in Manhattan tunnel.

Holing-Through N.Y.'s Brooklyn-Battery Tunnel

Another Du Pont Dynamite Job

In driving the 9,117-foot, $80,000,000 vehicular tunnel beneath New York Harbor, construction engineers unhesitatingly approved selection of Du Pont Dynamites for all blasting operations. Another project of the Triborough Bridge & Tunnel Authority, New York, it is the second longest vehicular tunnel, in the world. It will consist of twin cast-iron tubes 31-feet in diameter, tile-lined, to provide four lanes that will readily handle an estimated total of 16,000,000 vehicles annually.

Photo above shows east tunnel from air shaft sunk in solid rock, 140-feet below surface at midway point. Sketch at right shows ventilating building designed by McKim, Mead & White, architects. It forms a man-made island in the bay.

Battery Tunnel contractors using Du Pont Dynamites included: Mason & Hanger Co., Inc.; and George H. Flinn Corporation.

Whenever you have a job of blasting . . . ask your Du Pont Explosives representative for complete information about Du Pont Dynamites and job-speeding blasting supplies to meet your specific requirements for an economical and efficient operation.

E. I. DU PONT DE NEMOURS & CO. (INC.)
Explosives Department
Wilmington 98, Delaware

DU PONT EXPLOSIVES

(ELECTRIC BLASTING CAPS "NITRAMON"† DYNAMITES BLASTING SUPPLIES AND ACCESSORIES)

†Reg. Trade-mark for nitrocarbonitrate blasting agent.

Contractors and Engineers Endorse These Tunnel-Driving Products

Whether the job is a great engineering project or a minor work of construction, Du Pont Explosives, blasting supplies and accessories are used with confidence by contractors and engineers everywhere.

DU PONT SPECIAL GELATIN

. . . used in driving the Brooklyn-Battery Tunnel has long been a favorite with blasters on all types of construction work. Plastic, cohesive, easy to handle, water-resistant.

DU PONT "GELEX"†

. . . economical, semi-gelatinous dynamite also used in the Tunnel is supplied with or without perforated cartridges. Plastic and highly water-resistant

DU PONT "SERIES 8" DELAY ELECTRIC BLASTING CAPS

. . . a recent addition to the extensive line of Du Pont Caps. Recommended for rotational shooting. The "Series 8" is designed to eliminate risk of misfires due to arcing or "water hammer."

DU PONT ELECTRIC BLASTING CAPS . . "MS" (millisecond) DELAY CAPS--

Galvanometers . . Rheostats
Blasting Machines . . . Tamping Plugs
Leading Wire . . . Connecting Wire

†TRADE MARK REG. U. S. PAT. OFF.

Listen to "Cavalcade of America" Monday Evenings—NBC

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

FASTER LOADING

Another COST-CUTTING Application of VICKERS Hydraulics

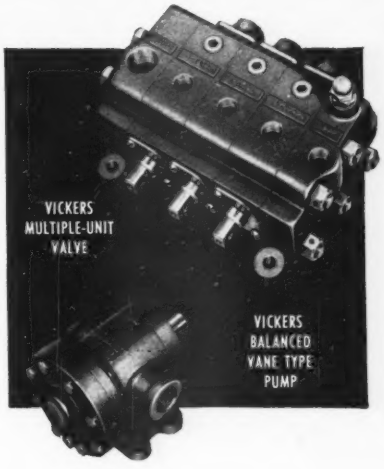
ATHEY Model 3 FORCE-FEED LOADER
SELF-PROPELLED

One important reason why users of the Athey Force-Feed Loader report savings in time and money is because it is equipped with Vickers Hydraulic Controls. A Vickers Multiple-Unit Valve is used to raise and lower the moldboard, throat, feeder and conveyor. Hydraulic power is supplied by a Vickers Balanced Vane Type Pump driven from the engine crankshaft pulley.

The Vickers Sectional Type Multiple-Unit Valve, available in many combinations for operating single- or double-acting cylinders, provides convenient and selective control. Ask for Bulletin 40-13.

Vickers Balanced Vane Pumps are outstanding for their long life and efficient operation. Their exclusive hydraulic balance construction entirely eliminates pressure-induced bearing loads and resulting wear. Longer life and less hydraulic slip are insured at maximum operating pressures. Ask for Bulletins 36-12 and 49-52.

3823



VICKERS Incorporated

DIVISION OF THE SPERRY CORPORATION

1496 OAKMAN BLVD. • DETROIT 32, MICHIGAN

Application Engineering Offices:

ATLANTA • CHICAGO • CINCINNATI • CLEVELAND • DETROIT
LOS ANGELES • NEWARK • PHILADELPHIA • PITTSBURGH
ROCHESTER • ROCKFORD • ST. LOUIS • SEATTLE • TULSA
WASHINGTON • WORCESTER

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

W-SPEED PATROL BD-3

BD-2 AD-3 AD-4

Choose the size

FROM ALLIS-CHALMERS' COMPLETE LINE

FOUR DIESEL-POWERED MODELS — all full-fledged construction machines — each one easily handles ditching, sloping, scarifying, black-top mixing, snowplowing, sod removal... as well as maintenance. Differences in weight, speeds, horsepower and cost enable you to match the machine to the job to be done . . . and to your budget.

LOW COST W-SPEED PATROL — long popular as an economical maintainer with townships, cities, counties... and with contractors for keeping up hauling roads and finished sections on their job. Gasoline powered, electric lights and starter, simple-to-operate controls.

Whatever your motor grader needs . . . your Allis-Chalmers dealer can fill 'em!

SAME OUTSTANDING ADVANTAGES ON ALL AD AND BD MODELS

ALLIS-CHALMERS

TRACTOR DIVISION - MILWAUKEE 1, U. S. A.

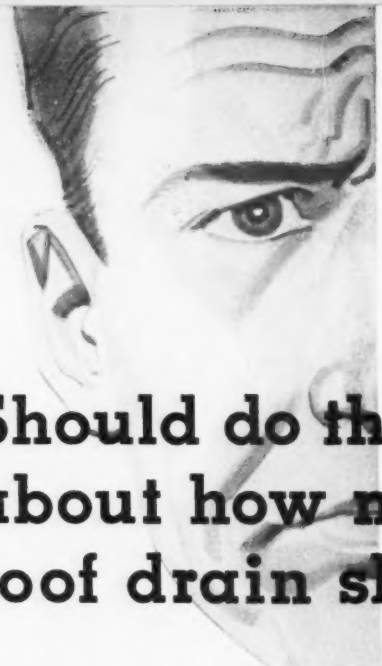
that fits the job

- A strong, shock-absorbing tubular frame that also protects control rods inside frame.
- High axle and throat clearance for handling bigger windrows without interference.
- Rounded construction of steering knuckles, spindles and drag links to prevent material from packing . . . assures unhindered operation.
- "Roll-away" moldboard that rolls instead of pushes material and thus speeds up work.
- A full circle revolving blade that allows grading forward or in reverse.
- A blade held firmly on its work, through direct down pressure, for precision cutting.
- A smooth-running, economical GM 2-cycle diesel engine that packs power in every stroke.
- Complete operator comfort with full vision, responsive controls, self-energizing brakes.

VERSATILE

FOR ALL KINDS OF USERS
FOR ALL TYPES OF MAINTENANCE

W-SPEED PATROL
31.5 brake hp. • 4,900 lbs.



Who

Should do the worrying about how much water a roof drain should handle?

EVERYTHING FOR DRAINAGE SYSTEMS . . . EXCEPT THE PIPE

Zurn Engineers are paid by us to do just that for you. Zurn Engineers, professionally trained and enlightened by over 40 years of experience, know what is required to meet every drainage service condition in every type of modern building. For instance, Zurn Engineers perceived the need for a roof drain that would handle a larger volume of water at a faster rate. They studied and analyzed the time factor in seconds and minutes; the rate of flow and its force; air pressures; open area ratios; hydraulic head; resistances to flow; temperatures; building design and construction detail; rainfall statistics; and numerous other conditions. Then they set to work to design the Zurn Cloudburst Type Roof Drain—a drain that not only will accommodate cloudburst conditions but will do so at reduced construction costs, as compared with conventional methods.

Zurn Engineering is engaged continually in research to determine new and unusual drainage requirements common to the construction of modern types of buildings and climatic conditions. Zurn Engineering is continually developing drains of suitable type required to perform specific drainage functions. Thus do Zurn Engineers substantiate the statement that *"Zurn Provides Better Ways, to Drain Waste and Rain Water, through Research and Engineering"*.

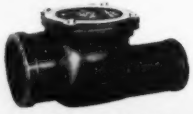
J. A. ZURN MFG. CO.
PITTSBURGH AVENUE • ERIE, PA., U. S. A.

ZURN **Provides Better Ways,**
to Drain Waste and Rain Water,
. . . through Research and Engineering

Z-506 and Z-507 Zurn Easy Level Floor Drain

Z-542 Zurn Continuous Flow Solids Retaining Floor Drain

Z-1171 Zurn Deluxe Cast Iron Greaseptor

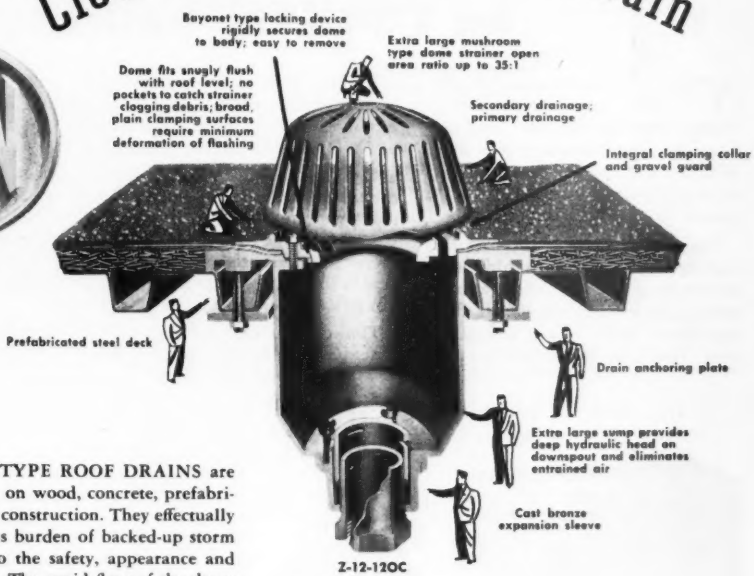


Z-1090 Zurn Backwater Sewer Valve with Cleansweep Water Ways

Z-1218 Zurn Carrier for Service Sinks

Cloudburst Type Roof Drain

ZURN


Bayonet type locking device rigidly secures dome to body; easy to remove
Extra large mushroom type dome strainer open area ratio up to 35:1
Dome fits snugly flush with roof level; no pockets to catch strainer clogging debris; broad, plain clamping surfaces require minimum deformation of flashing
Secondary drainage; primary drainage
Integral clamping collar and gravel guard
Prefabricated steel deck
Drain anchoring plate
Extra large sump provides deep hydraulic head on downspout and eliminates entrained air
Cast bronze expansion sleeve

Z-12-120C

Patented & Patent Pending

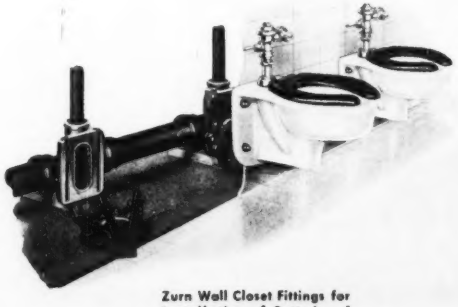
ZURN CLOUDBURST TYPE ROOF DRAINS are suitable for installation on wood, concrete, prefabricated steel deck or other roof construction. They effectually guard against the tremendous burden of backed-up storm water—a constant threat to the safety, appearance and permanence of roofing areas. The rapid flare of the dome facilitates maximum flow of water into the drain. Large, deep sump area in drain body maintains hydraulic head on downspout to compensate for pipe entrance friction factor; allows entrained air to escape. Consequently, the cloudburst type drain carries off sudden surges of water quickly and efficiently. This type drain marks a notable advancement in roof drainage—a guarantee against roof flooding with subsequent overload damage due to customary or occasional cloudburst conditions.

Z-150 Zurn Roof or Deck Drain for flat roofs or decks of tile, cement, concrete, pre-cast slab or other composition.

The complete line of Zurn Building, Plumbing, Drainage Products includes: **Floor and Roof Drains for every type of installation • Grease Interceptors • Oil Interceptors • Plaster and Solids Interceptors • Swimming Pool Equipment • Backwater Valves • Wall Fixture Carriers • Wall Closet Fittings • Plumbing-Drainage Fittings • Cleanouts • Bath Traps • Hydrants • Street Washers**

Zurn Draindicator Saves Time and Work

THE ZURN DRAINDICATOR was developed by Zurn Engineers as an aid to those in engineering and construction capacities. Provides the only sound engineering data on pipe line sizing, waste and storm or combined—also simplified drain selection for specific types of buildings. Although priced at $1.00 each, a supply of Draindicators has been made available for engineers and architects or plumbing contractors who may have a complimentary copy.



Zurn Wall Closet Fittings for Installation of Batteries of Wall-Type Closets.

J. A. ZURN MFG. CO., Pittsburgh Ave., Erie, Pa., U. S. A.

Please send information regarding Cloudburst Type Roof Drain and the following literature:

- ☐ Catalog 47-1 of Zurn Building, Plumbing, Drainage Products
- ☐ Zurn Draindicator
- ☐ Zurn Booklet on Wall Closet Fittings
- ☐ Zurn Handbook on the Proper Sizing and Selection of Grease Interceptors

Name ..... *Position* .....

Company .....

Street .....

City ..... *State* .....

Speeds hoisting, saves power on TIMKEN® bearings

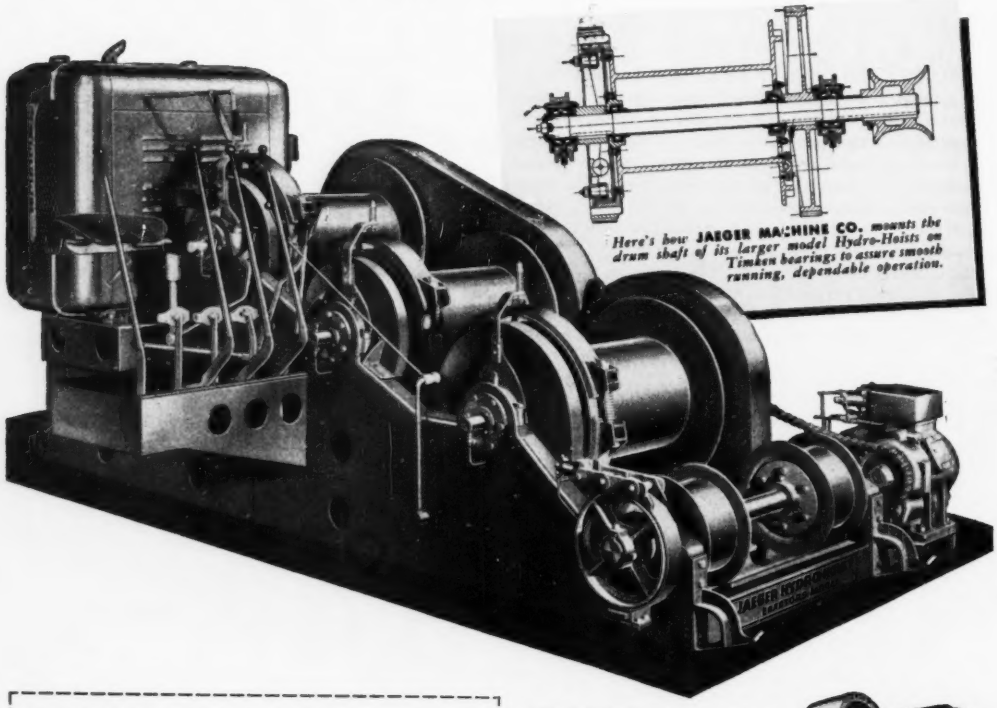
YOU can hoist loads speedily and efficiently with this Jaeger Hydro-Hoist on the job. Timken® bearings permit drums to turn freely under the heaviest loads. Loads start quickly and smoothly with no power loss due to friction.

Timken bearings keep both drums and drum shafts true-running and accurately positioned. Their tapered roller construction takes both radial and thrust loads in any combination. The line contact between the rolls and races gives tremendous load carrying capacity with negligible wear. Timken bearings normally last the life of the machine.

Timken bearings are made from the finest steel ever developed for this purpose—Timken fine alloy steel. Their true rolling motion and incredibly smooth surface finish enable them to operate freely, frictionlessly under the heaviest loads.

Timken bearings not only make better performing machines but also *better selling* machines—for Timken bearings are known and preferred the world over—wherever wheels and shafts turn. Be sure you have them in the equipment you build or buy. Look for the trade-mark "Timken" on the bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



Here's how **JAEGER MACHINE CO.** *mounts the drum shaft of its larger model Hydro-Hoists on Timken bearings to assure smooth running, dependable operation.*

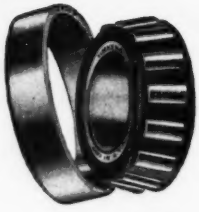
TIMKEN BEARING CAPACITY RATINGS INCREASED 25%

Since Timken bearings were last re-rated some 15 years ago there has been such a further and constant improvement in quality that we are now able to announce a 25% increase in radial and thrust load carrying capacity. This may make possible the use of smaller bearings with savings in bearing cost, material cost and weight. Engineers will be able to utilize the advantages of Timken bearings in more applications than in the past.

A new Timken Engineering Journal, now in preparation, will give you complete capacity rating tabulations. For further assistance, write us today.

TIMKEN

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ⟊ AND THRUST ⟊ LOADS OR ANY COMBINATION ⟊

What Engineers ask about

New BULL DOG V-BELTS

Fractional Horsepower (FHP) V-Belts in Three Standard Sections. Full Range of Lengths.

Industrial V-Belts in A, B, C, D, and E Sections. Full Range of Lengths.

BWH

DEPENDABLE RUGGEDNESS

why do new BULL DOG V-BELTS have less slippage?

Exclusive BULL DOG CORDS are processed in a new way, which results in amazingly low stretch. As a result, there's less slippage, fewer adjustments, longer belt life.

why do new BULL DOG V-BELTS carry heavy power loads for longer periods?

Exclusive BULL DOG CORD SECTION has higher tensile strength. This enables Bull Dog V-Belts to absorb the shock of sudden starts and stops, to run smoothly months on end.

why do new BULL DOG V-BELTS run cool and resist flexing?

BWH laboratories developed new quality-controlled compounds for Bull Dog V-Belts. Tests prove they run cool, don't crack or deteriorate under severe flexing.

why do we say new BULL DOG V-BELTS have proved their dependability?

Like all BWH products, Bull Dog V-Belts are put through the stiffest laboratory tests. But that's only the beginning! For ten years they've been given field tests under terrific hazards. Their performance proves they've got the stuff it takes for steady, trouble-free power transmission. And since their introduction in 1948, leading industries everywhere have found this newest addition to the famous BWH line fully upholds the BWH reputation for products of dependable ruggedness.

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all principal cities

PLANT: CAMBRIDGE, MASS., U. S. A. • P. O. BOX 1071, BOSTON 3, MASS.

POWER A-PLENTY

In CLEVELANDS

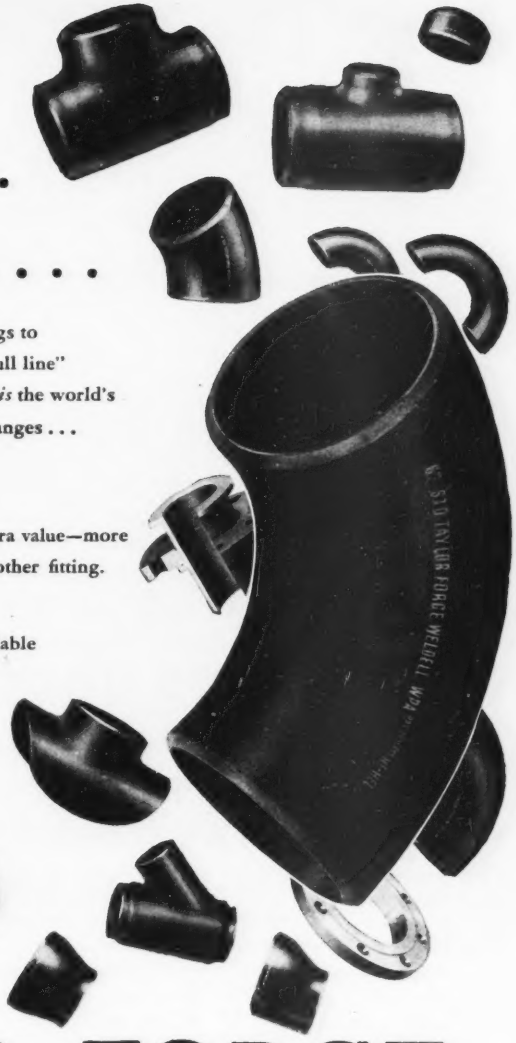
TRADE MARK

FOR THE *TOUGHEST* TRENCHING

In CLEVELANDS you have smooth-flowing, reliable power directly applied without waste or loss and ample at engine working speeds well below rated capacity. This power is delivered through husky, efficient transmission units resulting in a multitude of power and speed applications to wheel and crawlers. This guarantees the correct amount of power and speed for each and every digging and operating condition to be met—accounts for CLEVELANDS high, dependable daily footage in all kinds of going. Transfer of this cushioned power, with minimum waste, is by employment of a preponderance of anti-friction bearings.

THE CLEVELAND TRENCHER CO. 20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

FULL LINE . .
FULL VALUE . . .
FULL SERVICE . . . .



We have repeatedly urged users of welding fittings to accept no less than the *full line.* When we say "full line" we don't just mean its *completeness* . . . though it *is* the world's most complete line of forged steel fittings and flanges . . . and it *does* contain the widest range of types, sizes, weights and materials.

When we say "full line" we mean full value—extra value—more and better features than can be found in any other fitting.

The technical brains and forging skills which conceived these extra values continue to be available to you through the Taylor Forge organization, and through the Taylor Forge distributor who is your industrial neighbor.

Since Taylor Forge welding fittings "have everything," why compromise on less than the best?

TAYLOR FORGE

TAYLOR FORGE & PIPE WORKS General Offices & Works: Chicago 90, Ill. (P.O. Box 485) Eastern Plant: Carnegie, Pa. Western Plant: Fontana, Calif. • District Offices—New York: 50 Church Street • Philadelphia: Broad Street Station Bldg. • Pittsburgh: First National Bank Bldg. • Chicago District Sales: 208 S. LaSalle Street • Houston: City National Bank Bldg. • Los Angeles: Subway Terminal Bldg.

Do your piping systems create any fitting or flange problems for you?.....

If the information you need goes beyond the simple return of the coupon at the right, please write us fully. You will receive a prompt and detailed reply.

☐ Who is my nearest Taylor Forge Distributor?

☐ Put my name on your mailing list to receive informative literature.

Name_____

Position_____

Company_____

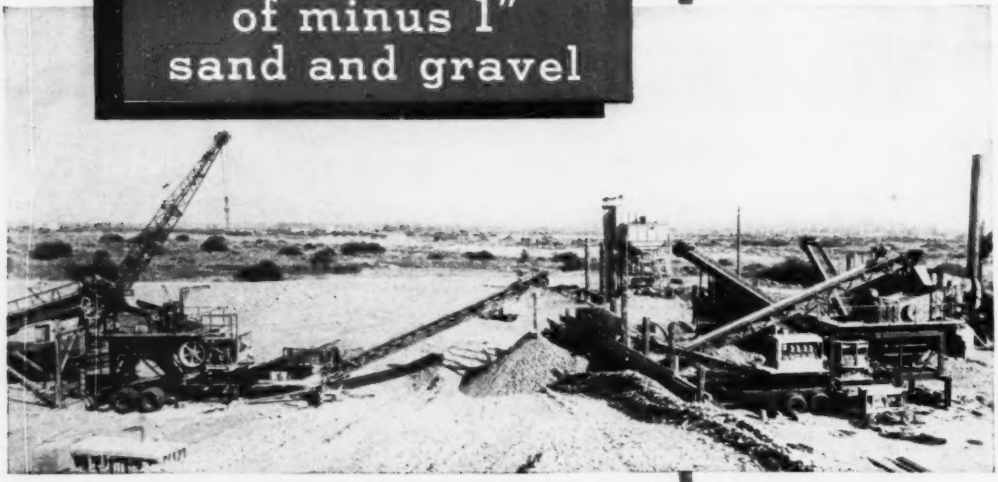
Street Address_____

City_____ Zone____ State____

614-0349 Mail to Taylor Forge & Pipe Works, P.O. Box 485, Chicago 90, Illinois

Enormous Capacity of minus 1" sand and gravel

● Morrison Knudsen Co. Telsmith 2-Unit Portable Crushing-Screening Plant near Ontario, California.



TELSMITH

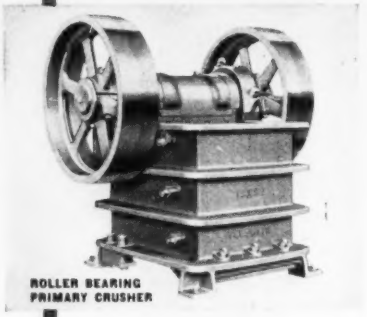
2-UNIT PORTABLE PLANT *with* Gyrasphere Secondary Crusher

● The MORRISON KNUDSEN CO. of Boise, Idaho, and California are producing about 275-300 tons per hour of minus 1-inch sand and gravel, for road building, with their Telsmith 2-Unit Portable Crushing-Screening Plant. Plant consists of . . .

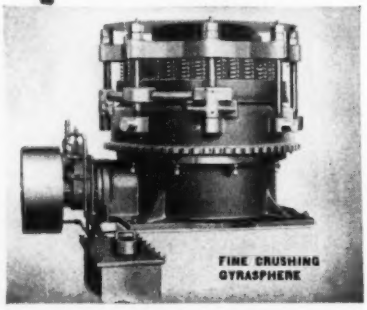
PRIMARY UNIT	SECONDARY UNIT
30" x 5'6" Plate Feeder	5' x 12' Triple Deck Sizing Screen
4' x 8' Double Deck Scalper	48" Gyrasphere Crusher
18" x 32" Roller Bearing Jaw Crusher	30" x 40' Plant Conveyor
30" x 25' Plant Conveyor	125 hp. Diesel Power Unit
105 hp. Diesel Power Unit	Five Feed and Stock-piling Conveyors

Primary Unit is taking pit run sand and gravel with 15" to 18" boulders, with the jaw crusher set at about 3". Material is then stock-piled, and fed to Secondary Unit, with Gyrasphere taking about 4" feed. Finished product goes to cement, and asphalt mixing plants. Here again, the Telsmith 2-Unit Portable Plant with Gyrasphere Crusher is giving remarkable capacities.

P-14



ROLLER BEARING PRIMARY CRUSHER



FINE CRUSHING GYRASPHERE

Consult TELSMITH Engineers . . . Get Bulletin P-2

SMITH ENGINEERING WORKS, 500 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Address: Sengworks, Milwaukee

51 East 42nd St. New York 17, N. Y. · 211 W. Wacker Drive Chicago 6, Ill. · 713 Commercial Trust Bldg. Philadelphia 2, Pa. · 238 Main Street Cambridge 42, Mass. · Boehck Eqpt. Co. Milwaukee 3, Wis. · Mines Eng. & Eqpt. Co. San Francisco 4, Calif.

Clyde Equipment Co., Portland 9, Ore., & Seattle 4, Wash. • General Machinery Co., Spokane 1, Wash. • Brandeis Machinery & Supply Co., Louisville 3, Ky. • Bish Equipment Co., Charleston 22, & Clarksburg, W. Va.—Roanoke 7, & Richmond 10, Va. • Wilson-Weesner-Wilkinson Co., Knoxville 8, & Nashville 6, Tenn.

3 RIGHT ANSWERS *to a Rocky Problem*

LORAINS CAN MOVE MORE ROCK FASTER —FOR YOU

WHEN rock or other tough digging conditions "play hob" with production, look to Lorain for the answer to your problems.

For these burly bruisers take rough going in their stride —can move more rock *faster* in a minimum of time. As a case in point, note the two heavy-duty 2-yd. Lorain-820 machines pictured above, slugging it out in the front line, while a powerful Lorain-41 crane, shown at the right, rounds out the operation. Its job at the moment—"secondary blasting" with a skullcracker.

Regardless of the type of work, you'll find Lorain will meet exacting job requirements and insure smooth, low-cost operation. All machines provide for complete interchangeability of boom equipment and feature 2-speed chain drive crawlers. Also available are Lorains which offer an alternate choice of highly mobile rubber-tire mountings.

See your Thew-Lorain distributor today. He has the right answers to your production problems.

THE THEW SHOVEL COMPANY • Lorain, Ohio
Cable Address: UNLOADER

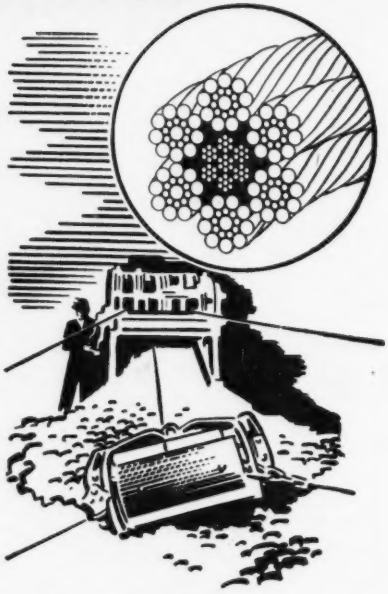
thew · Lorain

THEW-LORAIN 1899 50TH ANNIVERSARY 1949

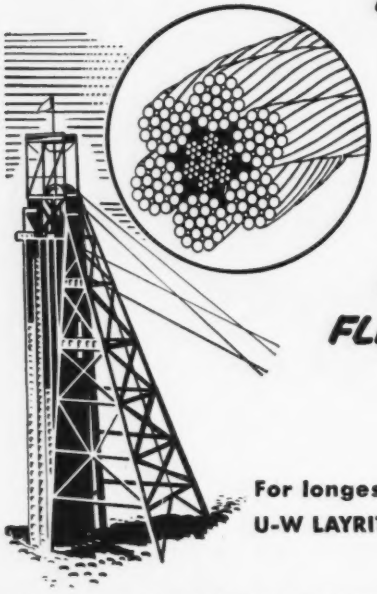
CRANES • SHOVELS • DRAGLINES • MOTO-CRANES

SOME ROPES FOOL YOU

U-W 6×19 SEALE IS AN EXCELLENT CONSTRUCTION FOR SLUSHER OR SCRAPER PULL ROPES BECAUSE IT HAS VERY COARSE OUTER WIRES TO RESIST ABRASION



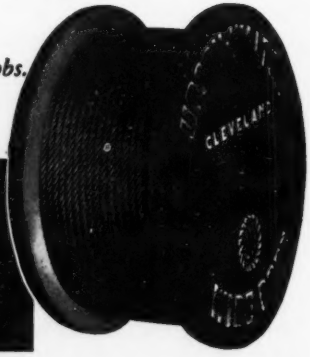
BUT...



FOR MINE SHAFT ROPES U-W 6×19 FILLER WIRE IS BETTER BECAUSE IT IS MORE FLEXIBLE AND RESISTS FATIGUE EXCEPTIONALLY WELL.

For longest and best service, always specify U-W LAYRITE (*Preformed*) IMPROVED PLOW STEEL

We invite you to let UPSON-WALTON engineer your tough rope jobs.



Copyright 1948—The Upson-Walton Company

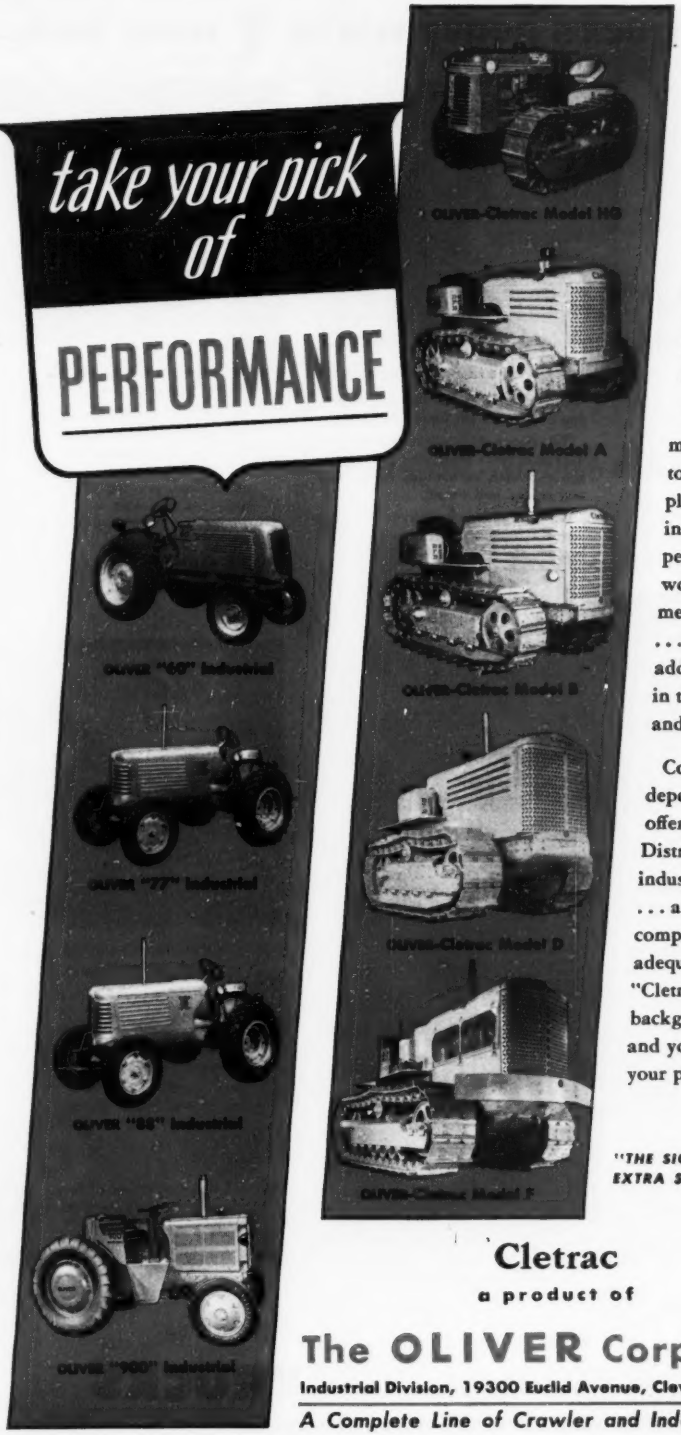
THE UPSON-WALTON COMPANY

Manufacturers of Wire Rope, Wire Rope Fittings, Tackle Blocks, Brattice Cloth

Main Offices and Factory: Cleveland 13, Ohio

114 Broad Street, New York 4 | 3525 West Grand Ave., Chicago 51 | 241 Oliver Building, Pittsburgh 22

take your pick of PERFORMANCE



● From the complete line of Oliver "Cletrac" Crawler Tractors and Oliver Industrial Wheel Tractors you can pick exactly the tractor you need and be assured of performance *in advance.*

The finest in industrial machinery is more than a slogan to Oliver . . . it is an accomplished fact that has been proved in year after year of outstanding performance. Design, materials, workmanship, and plant equipment are all based on one standard . . . the built-in dependability that adds up to more years of service in the field . . . lower operating and maintenance costs to you.

Combine this unsurpassed dependability with the *extra* service offered by your Oliver "Cletrac" Distributor . . . a complete line of industrial crawler and wheel tractors . . . a full line of allied equipment . . . complete service facilities and adequate stocks of genuine Oliver "Cletrac" repair parts . . . plus a broad background of field experience . . . and you'll see why you can take your pick of performance.

"THE SIGN OF EXTRA SERVICE"

OLIVER Cletrac SALES SERVICE

Cletrac

a product of

The OLIVER Corporation

Industrial Division, 19300 Euclid Avenue, Cleveland 17, Ohio

A Complete Line of Crawler and Industrial Wheel Tractors

Check your truck's heavy winter wear here...

It's been a wearing winter—

Maybe a spring leaf snapped during that severe cold snap. That could cause excessive tire wear, misalignment of axles. Or front-end parts may be sprung; that's bad for steering. Brakes may be worn; that's bad for stopping.

But . . . International's specialized spring service is *good* for what ails trucks.

It's been hard under the hood—

What winter weather took out of your engine, we can put back in!

We change oil, inspect, clean, adjust or replace spark plugs, distributor, voltage regulator, carburetor, valves, battery cables, and wiring.

All work is done by International factory-trained mechanics using special equipment.

It's been a tough grind. Here, there and—

Everywhere a truck needs lubrication, it needs lubrication now. So International service experts cover all chassis points, transmission, universal joints, differential, steering gear, wheel bearings, and any other spot that's too dry for its own good. And believe us, they do the job *right!*

It's time to get winter out of your systems—

We'll drain and flush the entire cooling system; refill, adding rust inhibitor, check water pump and cooling connections, check gaskets, hoses, connections and thermostat.

That's how International puts more spring in your truck's systems!

It's overhauling time—for trucks that have been hauling overtime—

4,700 International Dealers, and 170 Company-owned Branches and Service Stations offer you the nation's largest exclusive truck service organization. They're ready with specialized tools and service experience, ready with precision-engineered parts, ready with factory-rebuilt exchange units . . . ready to keep your trucks rolling profitably into spring and summer.

Have your trucks serviced *now* and save money and trouble later!

Other International Harvester Products
Farmall Tractors and Machines
Industrial Power . . . Refrigeration

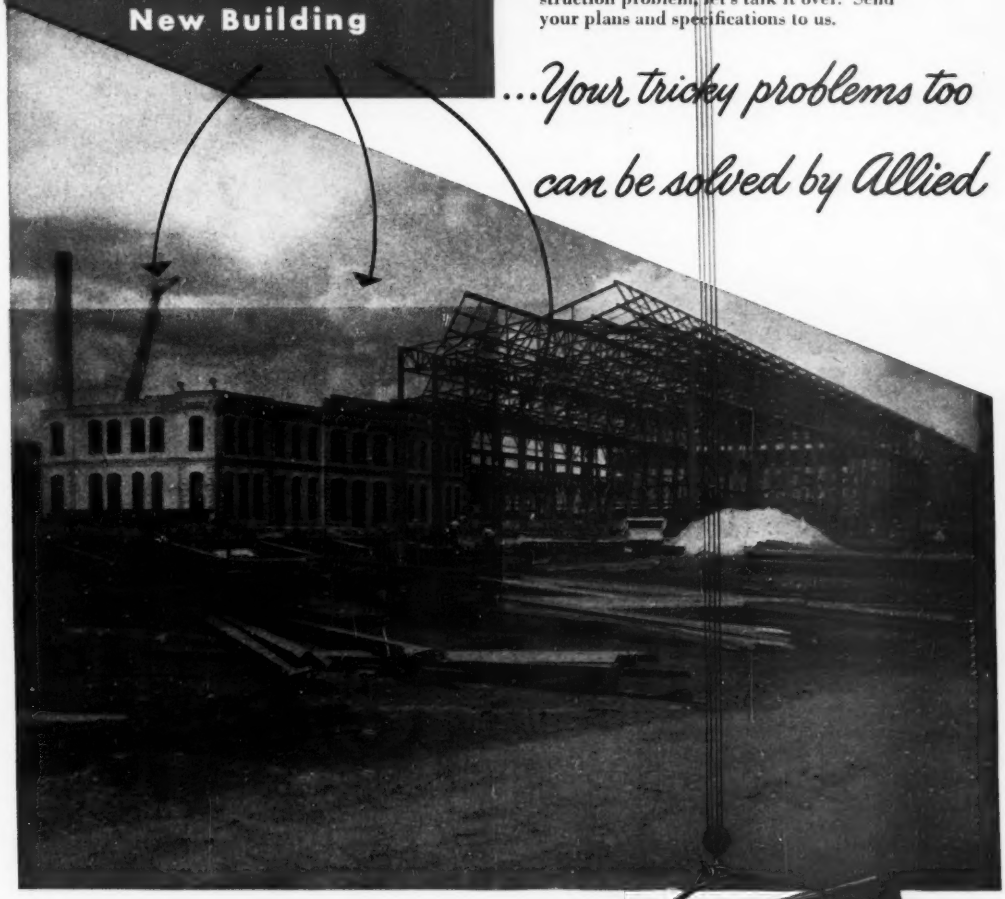
Tune in James Melton and "Harvest of Stars"
CBS, Wednesday evenings

INTERNATIONAL TRUCKS

INTERNATIONAL HARVESTER COMPANY • CHICAGO

A TRICKY CONSTRUCTION PROBLEM

This Office Building Remained in Service During Erection of New Building



While Allied erection crews "buttoned up" the structural units of this new industrial building, business in the adjacent office building went on as usual.

Allied crews are quick to adapt themselves to trying conditions. They promptly draw on their vast reserve of precision shortcuts to get the building up with minimum fuss . . . in scheduled time.

If you have plans and specifications ready on a building that presents a baffling construction problem, let's talk it over. Send your plans and specifications to us.

. . . Your tricky problems too can be solved by Allied

ALLIED STRUCTURAL STEEL COMPANIES
Engineers • Fabricators • Erectors
Send All Inquiries To Our Sales Engineering Dept.
20 N. WACKER DRIVE, CHICAGO 6, ILL.

LaPLANT-CHOATE

GOOD BEFORE

Getting a 17½-yard heaped load in a hurry is standard practice for the improved LPC Motor Scraper with its curved bowl bottom and offset cutting edge.

Improved

FOR INCREASED PRODUCTION

A few of the new features that cut down-time and increase hourly earnings

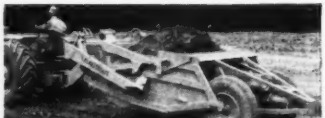
- NEW Heavy Duty Constant Mesh Transmission
- NEW 32-amp Generator
- NEW 12 cu. ft. Piston Type Compressor
- NEW and Improved CCU and Controls
- NEW Water Pump and NEW Cast Type Radiator for More Efficient Cooling
- NEW Simplified Starting System—dash controlled

PLUS all these original high production features

- Big Capacity—17½ yards heaped
- Big Power—225 H.P. Diesel—16 H.P. per struck yard capacity
- Big Brakes—22" x 7" 4-wheel—air
- Positive Hydraulic Steering—Double Acting
- High Speed—up to 19.25 m.p.h.
- Easy Loading—curved bowl bottom—offset cutting edges
- Positive Forced Ejection plus high apron lift

6, 8 and 14-yd. cable scrapers for any make of track type tractor.

2 and 4-yd. hydraulic scrapers for track type tractors.



2 and 4-yd. hydraulic scrapers for industrial rubber-tired tractors.

LaPLANT CHOATE

MOTOR SCRAPERS
BETTER NOW

Positive forced ejection and high apron lift, with the improved cable control, insures fast, accurate spreading. No time wasted in jockeying apron or tail gate to eject sticky material.

and lower operating and maintenance costs

Now you can have an even better LPC Motor Scraper, improved at every point so you can be sure it will stay on the job continually — complete your job on schedule — and assure good profits!

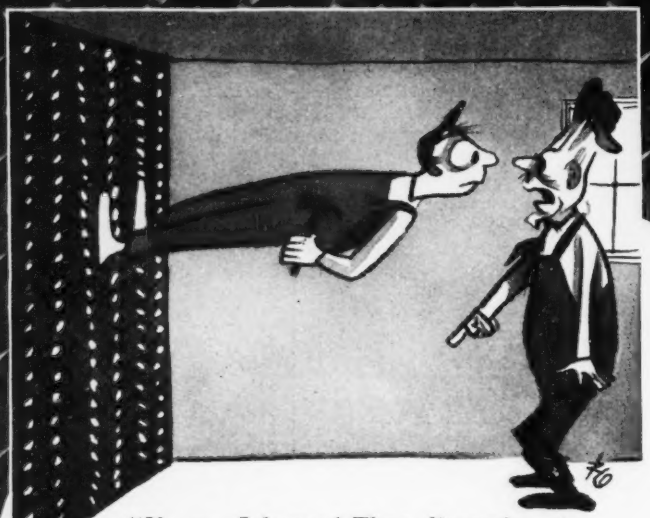
Increase production and profits — with the new transmission, you can use *all* of the 225 H.P. to handle capacity loads, at top speeds, up and down grades, even in tough operating conditions. Figure the added profit at your own bid prices of one additional load per hour over 10,000 hours of operation. The new 32-amp. generator provides all the "juice" needed for 'round the clock operation. Bigger air compressor for greater air output and more intermittent compressor operation. Improved cable control unit and controls save valuable seconds — give accurate spreading control.

24:00 x 29 24-ply traction type tires—interchangeable front and rear. 21:00 x 29 also available.

Add these and other new and improved features to the original proven high production features and you'll see why LaPlant-Choate Motor Scrapers give you the lowest possible cost per yard — per hour — per day for the long life of the unit.

Ask your nearest LPC distributor to show you a Motor Scraper in operation and for the complete details of all the improvements which mean more profitable earthmoving for you. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa — 1022 77th Ave., Oakland, Calif.

HIGH SPEED EARTHMOVING EQUIPMENT



"No, no, Johnson! That slip-resistant *4-Way* Safety Plate goes on the *floor!*"

INLAND STEEL

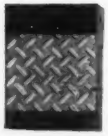
GRIPS FEET LIKE A GEAR TOOTH PREVENTS COSTLY SLIPS AND FALLS

Your men may not care about walking on walls, but it's a cinch they're a lot safer with Inland 4-WAY Safety Plate under foot. 4-WAY—on floors, walkways, ramps, platforms, steps—grips feet and wheels firmly in all directions. Its safety-lug pattern helps cut accidents and reduce lost man hours in your plant and on your products.

INLAND STEEL CO., 38 S. Dearborn St., Chicago 3, Ill. Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

Stocked by Leading Steel Warehouses

Write for Booklet



Inland 4-WAY* SAFETY PLATE

*Reg. U. S. Pat. Off.

THE CONSTRUCTION WEEK

CODE COMPROMISES—Big stumbling block in attempts to modernize city building codes are those who hold advantages under existing rules and who can bring political pressure to bear to maintain the status quo. Example: Akron, Ohio, where a city council code committee heard lengthy complaints from labor and local contractors, then announced that "we don't want to put anybody out of business—amendments (to the proposed code) will protect all now in business."

DOUBLE-SWING—Now that financing has been finally straightened out, bids should be asked by May on the unique double swing span bridge over the York River, near Yorktown, Va. The 2,540-ft. structure will have two 500-ft. swing spans to give a 450-ft. clear channel for shipping (ENR—July1, 1948,p.9), and was chosen because the Virginia highway department thought that a high-level crossing would be visible from the Yorktown battlefield, distract tourists from historic associations of the site.

RECHECK ON HOSPITAL CUT ?—The recent pre-budget cut of 16,000 beds in the Veterans Hospital building program is very likely to be reconsidered. President Truman reportedly assured Missouri congressional delegates that a re-survey of the cut in total beds will be ordered to determine if the original order needs to be modified. Particular object of Missouri worries is a cut from 1,000 to 500 beds contemplated for a VA hospital to be built in St. Louis.

RADIANT HEATING of a pavement in Detroit to keep it free of snow costs less than originally estimated (ENR Jan. 20, p. 68). An input of 40 kwh. per hour was enough to melt a 4-in. snow fall instead of the estimated 150 kwh. to keep the 1,000-ft. test section of pavement free of ice and snow. However, in view of the fact that the installation cost $2,500 and that at this rate of consumption there just would not be enough power available to heat all main city streets in the northern states, radiant heating has not yet outmoded the snowplow.

N. Y. ON POLLUTION BANDWAGON—Governor Thomas E. Dewey took the first step to enter New York State in the pollution-control parade when he asked state legislators to approve establishment of a board to "inaugurate and enforce" a long-range water purification campaign. His request followed a two-year study by a legislative committee, which recommended among other things that such a board have the power to classify all streams. It would also be empowered to enforce abandonment of practices responsible for pollution.

TO SOLVE JET-FUEL DAMAGE—If the Air Force goes through with its present plans for burning high-octane gasoline, rather than kerosene, in jet engines, a good part of the current problem of maintaining apron pavements—especially joints in concrete surfaces—will evaporate along with the spilled gasoline.

SAVINGS ON SEWAGE—Daytona Beach, Fla., and its pocket-size new sewage disposal plant promise a surprise for sanitary engineers when the plant goes into operation soon. Using waste sludge (calcium carbonate) from the local water-softening plant as the chemical precipitant, the "Daytona Beach Process" sharply reduces BOD with only one-hour detention, and is said to make possible drastic savings in construction and operation.

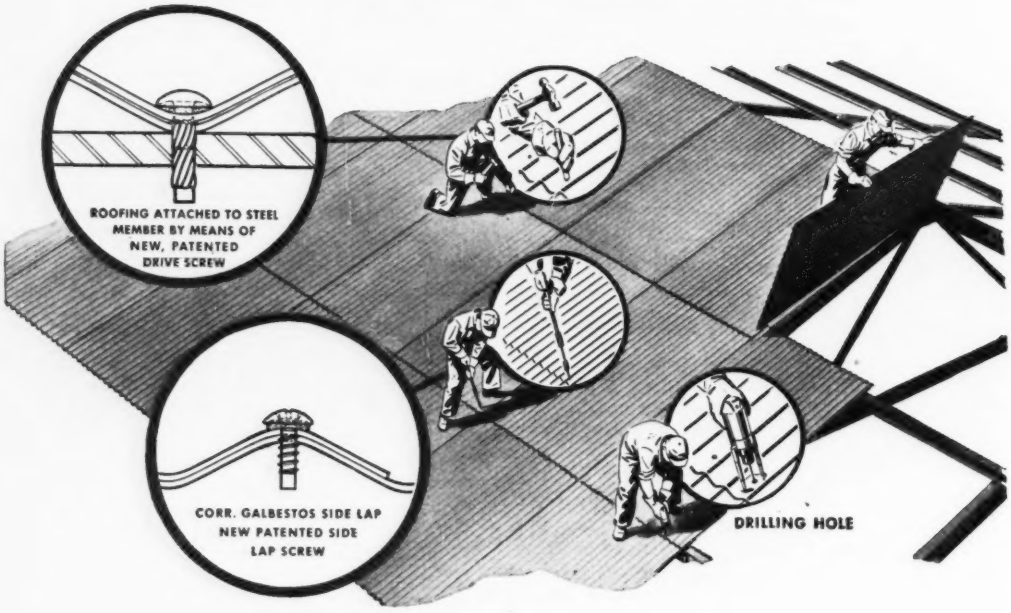
AND AGAIN — MVA—Despite President Truman's small estimate of its chances, Senator James E. Murray of Montana (with 13 colleagues) last week had dropped his pet Missouri Valley Authority proposal into the Senate hopper. Modeled after TVA, the Murray bill calls for speedy development of a basin plan; sets up a five-man board of governors and a general manager to run the authority.

STUDY TOLL ROADS—Led by Gov. Paul A. Dever and State Senator E. W. Staves, Massachusetts legislators are showing interest in construction of toll roads—particularly for connections between the Connecticut border and metropolitan Boston. Sen. Staves contends toll roads are the only means by which the state can finance the $700 million it will need for highway construction over the next few years.

PLUMBING CODE CONFLICT ? — While the Housing and Home Finance Agency was announcing plans for a meeting this month to discuss a national plumbing code, the American Society of Mechanical Engineers last week announced publication of American Standard Plumbing Code ASA-A40. 7-1949. The ASME code—sponsored jointly by the American Public Health Association —poses the likelihood of further delay in general adoption, should HHFA succeed in grinding out a code of its own.

SAME NUMBER OF MEN...SAME AMOUNT OF TIME...

BUT...TWICE AS MUCH DONE


ROOFING ATTACHED TO STEEL MEMBER BY MEANS OF NEW, PATENTED DRIVE SCREW
CORR. GALBESTOS SIDE LAP NEW PATENTED SIDE LAP SCREW
DRILLING HOLE

DO YOU KNOW GALBESTOS?

Robertson's protected sheet metal is steel with asbestos fused to it by metallic alloy. The fibers of asbestos are literally embedded in metal. So inseparable is this bond that Galbestos can be worked in ordinary sheet-metal shop equipment: crimped, rolled, sheared, bent and riveted like unprotected metal.

The asbestos is impregnated with asphalt, then waterproofed. Galbestos has been proved on installations all over the world to outlast any comparable material under the most grueling weather and industrial heat and corrosion. It virtually eliminates maintenance, which is actually continuation of first cost.

Galbestos comes in standard roofing and siding sheets up to 12 ft. long; maroon or black; flat or in several corrugations; for use over steel skeleton framework. Galbestos cuts cost of new building by saving large amounts of structural steel and other materials. It needs fewer purlins, less foundation.

Galbestos has been tested and classified by the Underwriters' Laboratories, Inc. and Assoc. Factory Mutuals Ins. Co's.

Would you like to see samples? Write for details.

Your own men can use Top-Speed Fastening*, a new method of attaching roofing and siding to steel frame. It's the first genuine means of cutting cost that has come out of the postwar.

Top-Speed Fastening uses a group of newly invented tools. But they're simple. And cheap. The system eliminates all interior scaffolding. So much time is saved that the same number of men in the same time can apply twice as much material.

That's big saving—and it's equally good on new construction or on repairs.

Now, here's another slant: Top-Speed Insulation* is a new method of applying insulation entirely from outside, before the sheeting is laid in place, again eliminating all interior scaffolding.

IF YOU USE TOP-SPEED FASTENING, THE TIME SAVED IS SO GREAT IT PAYS FOR THE LABOR NEEDED TO INSULATE. Therefore, you can, if you want, insulate merely for the cost of the material. Building Cost = Time + Materials. The only way to cut cost is to cut time or materials.

This ad cost a lot of money. We would waste it if we couldn't back it up! Write for the facts about TOP-SPEED FASTENING.

*patent applied for

H · H · ROBERTSON CO.

2420 Farmers Bank Building
Pittsburgh 22, Pennsylvania

Offices in 50 Principal Cities
World-Wide Building Service

Building Research

MUCH PROMISE FOR better building rests in the recent organization of a Building Research Advisory Board under the National Research Council. In none of the various phases of construction is there such a need for promotion and coordination of research as in that commonly referred to as building, which includes everything from houses to skyscrapers. And in none is effective research more difficult. Whereas dams, bridges, hydraulic structures, even roads, are the responsibilities of a relatively few organizations, buildings involve a veritable army of interests. It is because of this great diversity that an organization of the BRAB type seems to offer so much promise. Supported by all these interests—material and product manufacturers, architects, engineers, government and builders—it can command respect and develop authority. Set up under the National Research Council pattern, it has also the experience of other groups, such as the very effective Highway Research Board, to guide it. Not organized to do research itself, but dedicated to the stimulation and coordination of research efforts, it can exert effective leadership. One requirement that BRAB will have, which few other similar groups must face, is that of getting the results of building research utilized. In other fields research results are put to work immediately. In the building field, the user must be convinced of their usefulness, and his aid must often be enlisted to overcome building code restrictions. The success with which BRAB operates will largely be measured by the degree to which its reports are put to work.

New Berth for PRA

THE HOOVER COMMISSION in its latest report on government reorganization has recommended that the Public Roads Administration be transferred to a new division of transportation service in the Department of Commerce. So long as the PRA is kept intact, in organizational setup and policy, there would seem to be no particular disadvantage to this new berth; PRA has gone through previous transfers without harm. There is, too, an obvious logic in bringing under one tent as large a number as possible of federal agencies that relate to transport. The Commerce transportation service would include the Civil Aeronautics Administration, the Maritime Commission, the Coast Guard and part of the Interstate Commerce Commission. In so far as the PRA is concerned, it could function in such an atmosphere with the same efficiency as it has in the Federal Works Agency, or did previously in the Department of Agriculture.

The Hoover Commission recommendation is significant in another respect. It deflates the rumor that a huge public works department is going to be recommended in which roads, airports, buildings, dams and all other civil engineering activities would be concentrated. The exemption of highways and airports is a good move. In the first place the federal government is not engaged directly in their construction, but merely makes grants-in-aid to the states and cities. And in the second place, too much concentration can be as harmful as too little.

Centralized Transportation Planning

A TRANSPORTATION SERVICE division within the Commerce Department, as proposed by the Hoover Commission, has much to commend it, and seems to be a better plan than to set up a separate Department of Transportation headed by a Secretary of Transportation, as was proposed by one of the Hoover Commission "task forces." Under the present set-up, national planning for highways is in the Federal Works Agency, railway planning is a function of the Interstate Commerce Commission, recommendations as to where inland waterways are to be built is a responsibility of the Army Engineers, and decisions as to where airports should be built rests with the Civil Aeronautics Administration, which is now in the Department of Commerce. There can be no logical over-all thinking about transportation under such an arrangement.

St. Lawrence Ups and Downs

ACTION ON THE application of the Power Authority of the State of New York for permission to proceed with development of power in the international section of the St. Lawrence River in cooperation with the Hydro-Electric Power Commission of Ontario has been postponed by the Federal Power Commission. This is due to pending reconsideration by Congress of the 1941 agreement covering both power and the seaway. Unfortunately, withholding a permit can only result in further delay in getting engineering plans advanced to the point where construction can get under way quickly once the two countries reach an agreement. On the other hand, the M. & A. Hanna Company of Cleveland, one of the large ore and coal handlers on the Great Lakes and a long-time opponent of the St. Lawrence seaway, has come out in favor of the project as a means for bringing iron ore from Labrador and Quebec up into the Great Lakes. Such support from so influential an organization may well mean that when the seaway and power project does come up in Congress there will be little opposition.

Better Concrete

at no extra cost

with ATLAS *DURAPLASTIC

air-entraining portland cement

BETTER CONCRETE because Atlas Duraplastic air-entraining portland cement . . .

. . . Complies with ASTM and Federal Specifications. Provides the proper amount of entrained air by intergrinding with the cement the precise amount of air-entraining material needed for satisfactory field performance.

. . . Makes concrete more workable, more plastic, more cohesive and more uniform.

. . . Makes more durable concrete. Requires less mixing water. Minimizes segregation and bleeding or water-gain. Tends to reduce manipulation scale. Fortifies the concrete against freezing and thawing weather. Renders paving concrete highly resistant to scaling action of deicing salts.

. . . Makes better concrete block. Produces "rubbery" mix that holds together better. Withstands rougher handling. Reduces cracking, breakage, culls and throwbacks. Improves face and edge appearance. Generally increases strength.

AT NO EXTRA COST because Atlas Duraplastic air-entraining portland cement . . .

. . . Sells at the same price as regular cement.

. . . Produces concrete that handles, spreads, screeds and finishes more easily. Calls for no additional materials—merely the same care and good workmanship regularly employed.

. . . Requires no extra expense, materials or methods in concrete block making.

. . .

Originated and developed by Universal Atlas, Duraplastic is backed by field and laboratory tests. It is specified by an increasing number of architects, engineers, contractors, dealers, ready-mix operators and concrete products makers. It is used for general concrete work—for paving, sidewalks, foundations, floors and walls—for plaster, stucco, pump-crete, gunite and slip-form work—for concrete block, pipe, drain-tile and other products.

*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Co.

Send for further information *to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Bldg., New York City 17, N. Y.*

OFFICES: Albany, Birmingham, Boston, Chicago, Cleveland, Dayton, Des Moines, Duluth, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

ENR-D-68

ATLAS DURAPLASTIC
TRADE MARK REG. U. S. PAT. OFF.
AIR-ENTRAINING PORTLAND CEMENT
MAKES BETTER CONCRETE AT NO EXTRA COST
A UNIVERSAL ATLAS PRODUCT

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—ABC Network*

ENGINEERING NEWS-RECORD

MARCH 17, 1949 VOL. 142 NO. 11

Hoover report urges transfer of Army river engineering

Commission recommends Army civil works be turned over to Interior Department, along with reclamation, hydropower—Members file dissenting report, opposing transfer

The Hoover Commission March 17th submitted a report to Congress recommending that river development functions of the Corps of Engineers be transferred to another department of the government.

As part of its report on reorganization of the Interior Department, the commission advocated putting Army civil works in an integrated river development service, with reclamation and related hydro-power functions.

(A complete study of the Hoover report, and of the individual reports of the two task committees that did the spadework for the commission as a whole, will appear in these columns in the March 24 issue.)

The report shows plainly that the commission wrestled with a bear in making its decisions on reorganization of federal public works and natural resources activities. Two commissioners signed a strong dissent opposing any tampering with the flood control or rivers and harbors functions of the Army engineers. Three other members put together a separate minority report urging—instead of Interior—a new Department of Natural Resources, charged with the single broad responsibility of conserving and developing all resources, both land and water.

Four major responsibilities

Thus, of the twelve commission members, nine may be said to support the majority report—some of them with reservations, of which the dissent on Army civil functions is the most important. The majority recommends reorganizing the Interior Department to comprise four principal services: (1) Water development and use, (2) building construction, (3) mineral resources, and (4) recreation. Projects proposed by these services—after approval by the Secretary of Interior—would go for review to a board of impartial analysis in the office of the President.

The minority report differs fundamentally from this proposal. In the view of the three minority commissioners, a new department should be created to pull together all activities concerned with conservation and development of land and water resources. This department would take in land resource activities assigned to Agriculture by the majority report and would exclude building construction as extraneous to the purpose of a natural resources agency. The minority agrees that a board of review should be set up in the President's office to screen projects submitted.

Like the other 14 reports being sent to Congress by the Hoover Commission, the Interior Department report cannot become the basis of action until Congress gives the President authority to propose reorganization plans. Those plans then would be subject to Congressional veto.

From what has happened to authorizing legislation now before Congress, it is pretty obvious that the present session will block any proposal to take river development functions away from the Corps of Engineers. The House has passed a bill empowering the President to prepare and submit a reorganization plan, but this bill excludes several agencies—the national military establishment among them—from any general reorganization proposal (ENR, Feb. 17, p. 45).

The House-passed measure was referred in the Senate to the Committee on Expenditures in the Executive Departments, which has concluded hearings on the bill. This committee is headed by Sen. John L. McClellan of Arkansas, who also is a member of the Hoover Commission. Unalterably opposed to any transfer of Army civil functions, he is one of the two commissioners who joined in the potent dissent on that particular feature of the Interior Department report.

Within a week, his Senate committee hopes to report its version of the reorganization bill. The committee wants to submit a clean-cut bill—free from any exemptions, if possible, but the chairman and most of the members want to word the measure in such a way that no transfer of Army civil functions could get by this Congress. Giving either house power to veto a Presidential proposal may be the answer; Senator McClellan is sure the Senate would defeat any plan to shift the river development activities of the Corps of Engineers to any other agency.

Two court rulings affect foreign jobs

Contractors who do government work outside the continental United States had two decisions of the U. S. Supreme Court to guide them this week as to applicability of federal laws governing wages and hours. The court:

1. Held that the eight-hour-day law covering public construction does not apply to American citizens hired to work on a government contract job in a foreign country.

2. Refused to reconsider its decision of Dec. 6 which held that military bases leased from foreign countries are U. S. "possessions" for the purposes of administering the Fair Labor Standards (Wage-Hour) Act (ENR Mar. 3, p. 25).

The Wage-Hour Law case involved Americans employed by Vermilya-Brown Co. at a base in Bermuda which the United States has leased from Great Britain for 99 years. In asking for reconsideration of this decision, the various government agencies footing the bills asserted that higher labor costs resulting from the decision will "doubtless run into the hundreds of millions" of dollars. The court split, 5-4.

The Supreme Court was unanimous in denying a suit for daily overtime pay by a cook employed by Foley Bros., Inc., on government work in Iran and Iraq in 1942 and 1943. New York State courts had awarded the cook $3,328. The Supreme Court upheld the view of the government that the eight-hour law was never intended to apply to work abroad.

NEWS BRIEFS

Memorials—Allen County commissioners at FORT WAYNE, IND., hope to be able to accept bids this spring on the $3,000,000 War Memorial Coliseum . . . R. P. Weatherford, Jr., Kansas City, Mo., is architect for the proposed Truman Memorial at INDEPENDENCE, MO. . . . Vanderbilt University, NASHVILLE, TENN., will begin construction of the $1,500,000 memorial gymnasium-field house about June 1.

Power Projects—Boston Edison Co., BOSTON, MASS., plans to spend $78,000,000 in new construction during the next five years . . . Duke Power Co. is to build a $20,000,000 steam-electric generating plant on the Saluda River 17 miles southwest of GREENVILLE, S. C. . . . Cost estimates totalling about $22,200,000 have been prepared for two entirely new electric generating plants for the Niagara Hudson Power Corp. system in upstate NEW YORK.

Dams—Work has been resumed on the Harlan County Dam in NEBRASKA. . . . Construction of the $62,000,000 Wolf Creek Dam in KENTUCKY has been delayed by bad weather and high water, Col. H. V. Canan, district engineer of the Corps of Engineers reports. . . . MOBILE, ALA. office of the Corps of Engineers has released plans and specifications on the construction of a lock and fixed crest spillway for the $30,000,000 Jim Woodruff Dam on the Apalachilcola River near CHATTAHOOCHEE, FLA. Bids are asked for April 15.

Housing—At QUEBEC, QUE., a municipal housing project exceeding $25,000,000 is planned for this year . . . Forty-five builders in FORT WORTH, TEX., estimate that more than 4,000 homes to sell for under $8,000 may be built in that city this year . . . N. Y. CITY housing authority has taken bids for the Sedgwick Houses to occupy a 7-ac. site in the Bronx to provide 786 apartments . . . Maurice Krull has started work on the $5,000,000 Deepwater Village subdivision near PASADENA, TEX. . . . Plans are under way to spend $1,360,000 on 172 new units in the Lafayette Shores area of NORFOLK, VA. . . . Aberthaw Co., Boston, Mass., has started Harvard University's housing project for faculty families and veterans at CAMBRIDGE, MASS. . . . If approved by the state, the Mutual Benefit Health and Accident Association will underwrite the $6,000,000 housing project planned for an area bounded by 36th, 40th, Lake and Blondo Sts., OMAHA, NEB. . . . John J. Coleman, chairman of the Boston, Mass., housing authority, says bids will be asked in 60 days for two veterans' housing projects in the BRIGHTON section—648 family units in 3-story and 6-story apartment buildings.

(Continued on p. 266)

New railroad to shorten Chicago-Kansas City run

The Chicago, Burlington & Quincy Railroad plans to shorten its Chicago-Kansas City, Mo., main line 23 miles by constructing a new 45 mile road. This new section would be known as the Kansas City & Brookfield.

Wabash tracks would be used for 12¼ miles from Birmingham to Missouri City Junction; then the new railroad would stretch 45¼ miles northeast to Tina Junction. From there the Burlington's existing Carrollton branch would be used to Forkner, and a new seven-mile cutoff would join Forkner with the present main line at Brookfield.

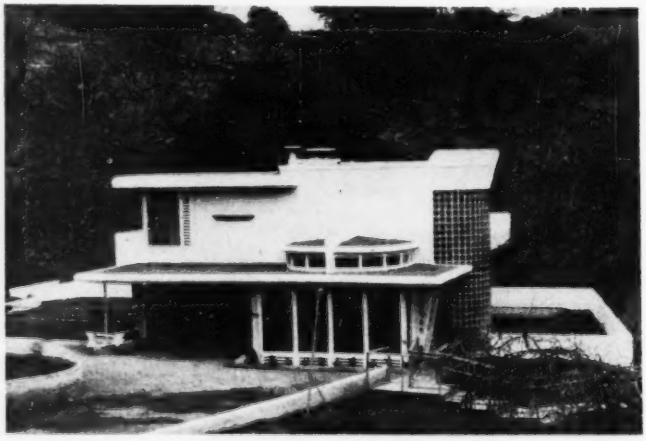
Totaling 86 miles, the new route would save 2½ to 3 hours in running time of night passenger trains between Chicago and Kansas City. Operation of two day-time "Zephyrs" would also be permitted by use of this short cut.

FWA Commissioner Field succeeded by P. F. Seward

George H. Field, Commissioner of the Bureau of Community Facilities in the Federal Works Agency, has resigned as of March 4 to join the Dahlman Construction Co., Milwaukee, Wis. To succeed him, Maj. Gen. Philip B. Fleming, Federal Works Administrator, has appointed Pere F. Seward, deputy commissioner for engineering in the Bureau of Community Facilities.

Mr. Field has been head of the bureau since it was established in 1945. Of the activities that he administered during that time, one of the most important was the advance planning program, discontinued by the Congress last year. While in effect, the program approved more than 7,000 applications for Federal aid in the preparing of plans and specifications for local public works, with the objective of building up a reservoir of projects ready to go in case of a construction slump.

Mr. Seward, before assignment to the bureau, was director of the projects division in the office of the Federal Works administrator during World War II. Previously he had been an engineer examiner and director in the projects division of the Federal Emergency Administration of Public Works. After serving in World War I, he was associated with the Maryland and North Carolina highway commissions.



PUSH BUTTON PARADISE—"Rendezview" is a super-modern home in San Rafael, Calif., said to worth $75,000. Owned, designed and built by Arnold H. Forsman, the structure is packed with electrically controlled gadgets. For radiant heating, there are water pipes above concrete floor slabs and beneath wood flooring. Aluminum foil below pipe reflects heat upward, and a five-hour saving in heating time is claimed. (Wide World Photo)

PRA shifts to Commerce Department under new reorganization proposal

Hoover Commission reorganization would create transportation service in department to include PRA, CAA and ICC functions

Proposed reorganization of the Commerce Department by the Hoover Commission would entail setting up in the department two new divisions—a transportation service and an industrial and commercial service. The transportation service would have charge of all the government's transportation activities—highway, marine and civil aviation—according to the report made last week to Congress on the Commerce Department.

Under the plan, the Public Roads Administration would be transferred from the Federal Works Agency to the proposed transportation service of the Commerce Department. This recommendation would indicate that other FWA functions—such as the Public Buildings Administration—would be assigned to existing government departments in the overall coordination scheme of the Commission on Organization of the Executive Branch of the Government (the Hoover Commission.) The Commission's suggestion can be carried out only with the authority of Congress, not yet spelled out in any final legislative bill.

Coordination needed

The commission stated that transportation activities now are scattered over many separate agencies, with consequent waste and overlap. Further, it said, there is no coordination of government policies in the transportation field. The report attempts to pull together in the Department of Commerce the government's varied interests in transportation, as Congress intended when it originally created the department. This proposal, however, excluded all regulatory functions, which the commission said ought to be divorced from operation.

On highway transportation, in addition to PRA, the commission recommended that motor-carrier safety functions—highly technical in nature—be transferred from the Interstate Commerce Commission to the proposed new setup in the Commerce Department. The report suggested no change in the present functions of PRA as an operating entity.

The commission report proposed that the present activities of the Civil Aeronautics Administration—including federal aid to airports—remain in the Commerce Department. These and other functions would be carried out by a suggested bureau of civil aviation under the transportation service. The bureau would also take in the National Advisory Committee for Aeronautics—though one commission member dissented from this suggestion.

Route regulation

On the planning of route patterns for transportation, the commission recommended that the Secretary of Commerce have the duty of making overall route programs for air, land and water. Up to the present, the report declared, route patterns have been determined haphazardly upon a case-by-case basis by regulatory agencies. Routes, it said, should be planned with careful consideration for the total transportation needs of the country and the areas to be served. For example, air route planning should be coordinated with airway and airport development programs.

For railroad transportation, the commission recommended a bureau in the proposed transportation service to take over two present ICC functions: to formulate railroad-consolidation plans and to deal with car service and safety.

The Coast and Geodetic Survey would remain in commerce as part of the navigation aids bureau.

Separate recommendations on the Inland Waterways Corp. will be made in its report on business enterprises of the government, the Hoover Commission promised in its commerce document.

Activities of the Weather Bureau, the commission suggested, should be coordinated with the proposed transportation service in a manner to be determined by the Secretary of Commerce. The Weather Bureau is now an agency of the department.

N. Y. professional engineers back state building code

The New York State Society of Professional Engineers has given its backing to Governor Dewey's plan for a mandatory statewide building code. (ENR Feb. 10, p. 15).

In Albany for their annual midwinter meeting last week, the society approved a commitee report favoring the governor's proposal to reduce housing costs by permitting use of new materials and new construction methods. The plan would require cities to permit any construction that complied with the state code.

Ellis L. Lavine, New York City, chairman of the society's committee on housing and codes, said the adoption of statewide minimum standards would result in more and cheaper housing by bypassing the "antiquated restrictions" of many cities in the state.

The committee took issue, however, with the governor's proposal to have the new code drawn up by a full-time commission. The committee recommended an 11-member commission, only three of whom would be employed full time and all of whom should be professional engineers or registered architects. On March 2 Governor Dewey, in a special message, urged the Legislature to adopt the Fino-McCullough bill creating a State Building Commission.

Mr. Lavine said the commission should begin work first on a code for one-and two-family houses, leaving standards for other types of construction until later.

The engineers also urged Congress to retain provisions of the Taft-Hartley Law exempting professional employes from blanket coverage in labor agreements.

Officers named by ASBO at San Antonio meeting

At a meeting of the Coordinating Council of the American Society of Building Officials at San Antonio, Tex., a full slate of officers were named to head the group during its first year of formal operation.

The meeting was held for the purpose of electing officers and developing a constitution and by-laws for the organization. ASBO was formed by the Pacific Coast Building Officials Conference and the Building Officials Conference of America to provide an overall organization to act as a coordinating council for all building officials organizations in the United States of more than state-wide scope.

The following officers were named: president, Gilbert E. Morris, superintendent of the Department of Building and Safety, Los Angeles, Calif.; first vice-president, Walker S. Lee, superintendent of building, Rochester, N. Y.; second vice president, Harold O. Rasmussen, chief building inspector, Santa Ana, Calif.; secretary, Hal Colling, managing secretary, Pacific Coast Building Officials Conference, Los Angeles, Calif.

BETTER ROADS FOR MEXICO—Latest IRF affiliate, Mexican Road Association celebrates its formation with a dinner at which Jose Rivera, its new director general, spoke. Others at the table (l. to r.) are Romulo O'Farrill, president of the Mexican group; Garcia Lopez, Mexican minister of communications and public works; J. H. Sembower, executive director, IRF; and M. C. McIntyre, General Motors of Mexico.

IRF reports on foreign road promotion

Since its organization last July, the International Road Federation, which was formed and financed by leading oil, automobile and rubber companies, has had an interest in raising living standards abroad through the development of better roads (ENR July 22, 1948, p 42).

It has been instrumental in organizing or securing affiliation with national highway groups in eight countries. These are: France, Switzerland, England, Sweden, the Netherlands, Uruguay, Brazil and Mexico. Working parties have also been formed in Peru, Chile and Argentina looking toward organizations there, and negotiations are underway in New Zealand, Australia, the Philippines, South Africa, Pakistan and India. A near-miss was scored in Venezuela when the revolution interrupted a plan that was almost complete. A Belgium federation will be dedicated in the next few weeks.

Mexico joins up

The latest success of the IRF was recorded in Mexico last month with the formation of the Mexican Road Association. Composed of businessmen in that country, it has the backing of the federal government and of President Aleman who took a prominent part in the dedication ceremonies. Jose Rivera is director general of the Mexican group (ENR Mar. 10, p. 35).

With a nucleus of a dozen or more federations in various parts of the world, the second phase of the IRF plan—distribution to these federations of authoritative information from U. S. road planning, construction and research groups—will begin. This reporting system will also facilitate interchange of data from each of the member countries among the federated groups.

ECA seeks U. S. geologists, engineers for Britain

Nearly 60 geodetic engineers, geologists and chemist-assayers will be recruited in the United States to speed surveys that have been moving slowly in certain British colonial areas—in Africa, Borneo and British Guiana—the Economic Cooperation Administration announced recently. ECA has earmarked $1,500,000 to pay salaries of survey personnel and has made an agreement with the United Kingdom to release up to 420,000 pounds sterling – about $1,680,000 – from the counterpart fund to take care of other expenses.

The U. S. geological survey will act as recruiting agent for ECA in signing up 19 geologists, three petrologists and three chemist-assayers for a period of three years. Arrangements are being made with USGS and the Army map service to recruit 24 to 30 geodetic engineers, but it may take several weeks to put this plan into operation. Meanwhile, inquiries can best be directed to Evan Just, chief of the division of strategic materials, ECA, Washington 25, D. C.

Trained geodetic engineers are needed to make basic control surveys for topographic air mapping in Africa. The men will be attached to the colonial survey now engaged in photographing and mapping large parts of Uganda, Kenya, Northern Rhodesia, Nyasaland and Tanganyika.

Geologists recruited here will be assigned to surveys now in progress in Africa and other British colonial areas, including Nigeria, the Gold Coast, Sierra Leone, Uganda, Kenya, Tanganyika, Borneo and British Guiana. Of the long list of minerals now produced or known to exist in these colonies, a number could be developed to relieve present shortages and assist European recovery.

Trained personnel of the kind required for the survey projects is limited in number. ECA does not know whether the full complement of men can be obtained. Progress of the surveys—started in 1946—has been delayed by a personnel shortage resulting from war-time interruption of technical training programs in Britain.

Herbert S. Crocker dies; former ASCE president

Herbert Samuel Crocker, 81, former president of the American Society of Civil Engineers (1932) and an honorary member of the society since 1940, died March 8 at his home in Denver, Colo.

A native of Haverhill, N. H., Col. Crocker took his engineering degree from the University of Michigan in 1889, and began his long engineering career as a draftsman with the bridge department of the Chicago, Milwaukee and St. Paul Ry. He continued in railway engineering with this and other railroads until 1896.

Commissioned a major (and later lieutenant-colonel) of engineers in 1917, Col. Crocker was assigned to the Army base in Brooklyn, N. Y., as construction quartermaster, and while serving in this capacity he directed construction of what was then the largest concrete building ever built—the $32,000,000 Army installation.

He served as acting secretary of the ASCE for a brief period in 1920-21, and then returned to Denver to enter private practice, devoting himself largely to structural, irrigation and water supply problems. He also designed the administration building at the Denver airport; was a partner in a contracting firm building highways and bridges in the Rocky Mountain West; and served as a member of the Mississippi Valley Commission and many other public bodies.

Preload Corp. opens suit against Pacific Bridge Co.

Preload Corp., of New York City, and Preload Enterprises, Inc., Delaware subsidiary, have filed suit for $1,500,000 damages against the Pacific Bridge Co. of San Francisco in the U. S. District Court of Delaware at Wilmington, alleging infringements of nine patents.

Preload Enterprises and Preload Corp., designers and builders of prestressed concrete structures, said in their bill of complaint that they had used for a number of years the trade name "Preload," and with it a certain characteristic design.

Claiming trade mark infringement, the plaintiff alleged that the Pacific Bridge Co. "has for a long time past and is still utilizing the trade name 'Preload' and trademark 400,513 in its advertising, and in connection with its manufacture, use and sale of prestressed concrete structures of the type designed and built by the plaintiff, all without license or permission by the plaintiff."

The complaint also charges that the defendant company "has appropriated designs for prestressed concrete structures prepared by the plaintiffs," appropriated avertising, advertising pictures and literature of the plaintiffs, prevented plaintiffs' licensee, the Preload Pacific Corp., a Nevada corporation, from bidding on prestressed concrete structures, entered bids for itself on such structures using plaintiffs' designs and advertising, accepted such bids, and built and sold such structures."

As it has just recently received the bill of complaint, the Pacific Bridge Co. has no comment at this time.

Pacific Bridge Co. used the Preload system first on a water tank for the city of Grand Coulee, Wash., and it is curently using it on 18 large digesters at the Hyperion sewage plant at Los Angeles, Calif.

USBR asks bids April 1 on North Dam, Washington

A call for bids has been issued recently by the Bureau of Reclamation for construction of the 1,400-ft. North Dam and equalizing reservoir of the Columbia Basin irrigation project. Completion of 9,500 ft. of the feeder canal which will carry water to the reservoir from the Grand Coulee dam pumping plant is also included.

North Dam will contain about 1,235,000 cu.yd. of earth and rock and will have a maximum height of 145 ft. above lowest bedrock. Specifications call for 1,650,000 cu.yd. of excavation, 54,000 cu.yd. of concrete and furnishing and placing 7,000,000 lb. of reinforcing steel. Bids will be opened at Grand Coulee Dam April 1.

North Dam is the fourth to be built in the Columbia Basin project. Long Lake Dam is completed and the 3½ mile O'Sullivan Dam and the 10,000-ft. South Dam completed this summer.

OK development plan for Pacific Northwest

An initial development program, covering first steps in long-range construction plans involving expenditure of $2.5 billion in the Pacific Northwest was approved by the Columbia Basin Inter-agency Committee meeting at Portland, Ore., late last month.

With a view to co-ordinating objectives of state and federal agencies, the committee listed an eight-point, six-year program for development of resources in the area. These objectives were named:

(1) Adequate water supplies for domestic, industrial and irrigation purposes. (2) Soil conservation and new land cultivation, including irrigation, in the interest of the nation's food supply. (3) Watershed conservation by placing forests and grazing lands largely on sustained-yield basis. (4) Reduction of flood damages to nominal amounts. (5) Additional hydroelectric development to produce sufficient power to keep abreast of present and potential economic growth of the region, and to ease pressure on the nation's fuel reserves. (6) Navigation development on the Columbia, Snake and Willamette rivers. (7) Conservation and enhancement of fish and wild life. (8) Fostering recreational, park and related facilities.

This program was presented by the committee as a summation of proposals by the principal federal agencies and states concerned. The committee will meet with the Idaho State Reclamation Association at Boise March 24.

Tacoma power project to require FPC license

Construction by Tacoma, Wash., of its proposed water power project on the Cowlitz River will require a license, the Federal Power Commission announced last week. The finding was based on the fact that the project would affect public lands or reservations of the United States, as well as the interests of interstate commerce.

Tacoma, through its light division, Department of Public Utilities, last August filed a declaration of intention to construct the project and followed it with an application for license in December.

Project plans call for one 350-ft. high dam, near the town of Mossy Rock, and a 225-ft. dam in the vicinity of Mayfield. The Mossy Rock dam, to create a reservoir with a storage capacity of 1,375,000 acre-ft., would have a powerhouse with an installed capacity of 225,000 kw. in three units. The Mayfield reservoir, with a storage capacity of about 127,000 acre-ft., would operate three generating units with a total capacity of 120,000 kw.

NOAH HAD HIS ARK—Floods have not changed much, but emergency transportation surely has. Scorning the conventional row boat these Hughes Manufacturing Co. employees of Seward, Neb., took to their "Hyster" when the Big Blue River recently flooded the town. (Wide World Photo)

SUSQUEHANNA CROSSING—This 4,526-ft. structure will be built on the eastern extension of the Pennsylvania Turnpike.

Low bid is $4.7 million on Penn Turnpike bridge

Booth & Flynn of Pittsburgh recently have been announced unofficially as low bidder on construction of a 4,526-ft. bridge to carry the Pennsylvania Turnpike across the Susquehanna River. The firm submitted a combined bid for both substructure and superstructure totaling $4,777,500.

Second low bid was a combination of the bid of Booth & Flynn for the substructure and that of Bethlehem Steel Co. for the superstructure; these totalled $4,876,400.

This structure will carry four-lane traffic of the eastern extension of the Pennsylvania Turnpike. It will consist of 46 spans of deck girders and beams. The 45 land and river piers will set approximately 2½ ft. into solid rock. Decking of the two 26-ft. roadways will be of reinforced concrete.

T. J. Evans, chairman of the Pennsylvania Turnpike Commisison, estimates that construction work will require 480 days and will be completed about July 1, 1950.

Another announcement by the Pennsylvania Turnpike Commission states that of bids opened for construction of a 5-mile length of the eastern extension the low bidder is J. Robert Baisley, Inc., of Pottsville, Pa., with a $1,934,200 proposal. This contract calls for grading, drainage, structures and paving of turnpike in Middlesex and Silver Springs townships.

Low bid is $16.8 million on Chesapeake Bay bridge

Bidding on five separate contracts covering the superstructure of the Chesapeake Bay bridge, Bethlehem Steel Co., submitted a proposal totalling $16,854,000 last week.

Second low—and the only other bidder on all five sections—was American Bridge Co. of Pittsburgh with a $17,612,000 bid. Harris Structural Steel Co., of New York, bid $4,915,000 on two parts of the job.

Maryland's State Roads Commission has submitted the bids to J. E. Greiner, consulting engineer, for detailed study. Award of the contracts, which may be divided among the companies, is expected to be made soon.

Sections of the superstructure were divided for bidding, as follows:

Section 1—67 60-ft. beam spans, 21 100-ft. girder spans and seven 200-ft. girder spans for a total of 7,664 ft.

Section 2—Four 250-ft. deck truss simple spans and six 300-ft. deck truss simple spans for a total of 2,850 ft.

Section 3—12 deck truss cantilever spans for a total of 6,131-ft.

Section 4—Truss cantilever spans over the east shipping channel, 1,719 ft. long.

Section 5—Suspension spans over the main shipping channel for a total of 2,922 ft.

Towers 350 ft. high will support the main suspension span. Nearly 35,000 tons of structural and reinforcing steel will go into the bridge.

Contracts totalling $2,372,000 have already been let, including: Two contracts for supplying steel piling held by Carnegie Illinois Steel Co. and Bethlehem Steel Co.; test borings being made by Raymond Concrete Pile; test-pile driving by Tidewater Construction Corp. of Norfolk, Va.

Bids are due to be opened Mar. 22 on the remaining large contract—the substructure.

Phila. prestressed bridge finally awarded to Horst

Philadelphia's Walnut Street Bridge —first U. S. structure of its type— will be built by Henry W. Horst Co., general contractor (ENR Dec. 30, p. 16).

The long awaited contract was awarded last week on a $698,383 bid to the Philadelphia firm after much deliberation by the city solicitor's office. Low bid of $652,000, submitted by Corbetta Construction Co. of New York, accompanied an alternate design and was found unacceptable.

All other bids were based on the stipulated plans and specifications prepared by the Bureau of Engineering, Surveys and Zoning in cooperation with the Department of Public Works of the City of Philadelphia. Bids were opened Jan. 19.

Highway officials hear $322 million Boston plan

Highways that are to be constructed in the $322 million master plan for Greater Boston should be under way by 1950, Harold J. Duffy, project engineer for the State Planning Board, told the recent session of the Association of Highway Officials of the North Atlantic States. The group conducted a three-day session at Hotel Statler in Boston.

Mr. Duffy stated that the eight radial highways to be built within the city will total 87 miles, will each carry up to 80,000 vehicles a day by 1970, and will take at least 10 years to complete.

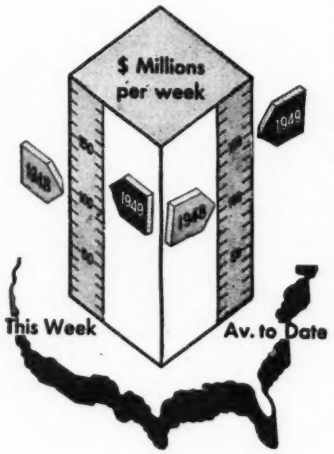
"Work is already proceeding on some of the essential projects of the plan," he said. "The Mystic River Bridge construction is under way. Work on the East Boston express highway has been started and construction plans for the second traffic tunnel under Boston Harbor are progressing."

He expressed the belief that the system should be financed by bonds rather than on pay-as-you-go basis, and said that provisions should be made for toll payments on at least some of the roads.

Among other speakers at the session were Thomas H. MacDonald, U. S. Commissioner of Public Roads, Wilfred Owen of the Brookings Institute, and Spencer Miller, Jr., State Highway Commissioner of New Jersey. These three outlined different phases of the transportation revolution which is severely overtaxing present highway systems.

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Mar.'49	474.80	228.24
Building Cost	Mar.'49	352.47	190.54
Volume	Feb.'49	255	112



Activity This Week

As reported to ENR

Amount of contracts let

(Millions of dollars, continental U. S. only)

	Week of Mar. 17 1949	Cumulative 1949 (11 wks.)	Cumulative 1948 (12 wks.)	% Chge
Federal	$29.4	$247.2	$284.8	−5
State & Mun.	38.0	514.7	416.3	+35
Total Public	$67.4	$761.9	$701.1	+19
Total Private	59.8	797.4	585.7	+49
U. S. Total	$127.2	$1,559.3	$1,286.8	+32

Contracts by type of work

	This Week	Cumulative 1949 (11 wks.)	Cumulative 1948 (12 wks.)	% Chge
Waterworks	$4.3	$28.3	$38.6	−26
Sewerage	3.8	40.8	36.3	+22
Bridges	4.1	76.8	52.1	+61
Highways	6.4	98.1	157.1	−32
Earthwork, Waterways	18.3	104.1	139.7	−19
Buildings, Public	25.5	363.6	230.9	+72
Industrial	2.1	209.0	148.2	+54
Commercial	11.3	519.8	381.3	+49
Unclassified	11.4	118.8	102.6	+26

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1949 (11 wks.)	Cumulative 1948 (12 wks.)	% Chge
NON-FEDERAL	$1018.7	$714.2	+56
Corporate Securities	495.7	386.9	+40
State and Municipal	523.0	327.3	+74
Total Capital	$1018.7	$714.2	+56

AGC hears explanation of percentage contract

A form of contract, called "The General Percentage Contract," was explained to the recent AGC convention by R. E. Dougherty, past-president of ASCE and retired vice-president of The New York Central Railroad. While the form is not new, it has not been used as widely as it might, especially in unsettled times (it was used successfully in the Toledo Lake Terminal).

This contract has basic cost and basic fee provisions under which an approximate estimate of quantities of work is given to the bidder, who submit unit prices or lump-sum figures for the various items. The total would be called the basic cost. The contractor would submit a fee figured as a percentage to be applied against the basic cost and called the basic fee.

In addition to these figures, a lump sum would be quoted for plant rental and for use of equipment.

Upon completion of the work the exact quantities are prepared with a new estimate, using the new quantities with the unit and lump sums mentioned in the original bid. This is called the revised basic cost, and the percentage fee on this new figure is called the revised basic fee. If actual cost is less than revised basic cost, the contractor, in addition to the revised basic fee gets 50 percent of the saving, not to exceed 50 percent of the revised basic fee. Should actual cost exceed revised basic cost, the contractor's fee is reduced from the revised basic fee by 50 percent of such excess, but by not more than 50 percent of the revised basic fee.

Air Force offers reserve commissions

United States Air Force Reserve commissions are now available to qualified engineers. Commissions in grades ranging from second lieutenant to colonel will be filled by applicants who can meet the requirements of age, education, experience and physical condition.

Those possessing degrees in architectural, structural, civil, mechanical, industrial or electrical engineering; city management or planning; or industrial management are eligible. A minimum of three years' experience is required.

Grades will be based on total number of years of qualifying experience with the following scale of minimum requirements: lieutenant, 3 years; captain, 7 years; major, 14 years; lieutenant colonel, 19 years; colonel, 25 years.

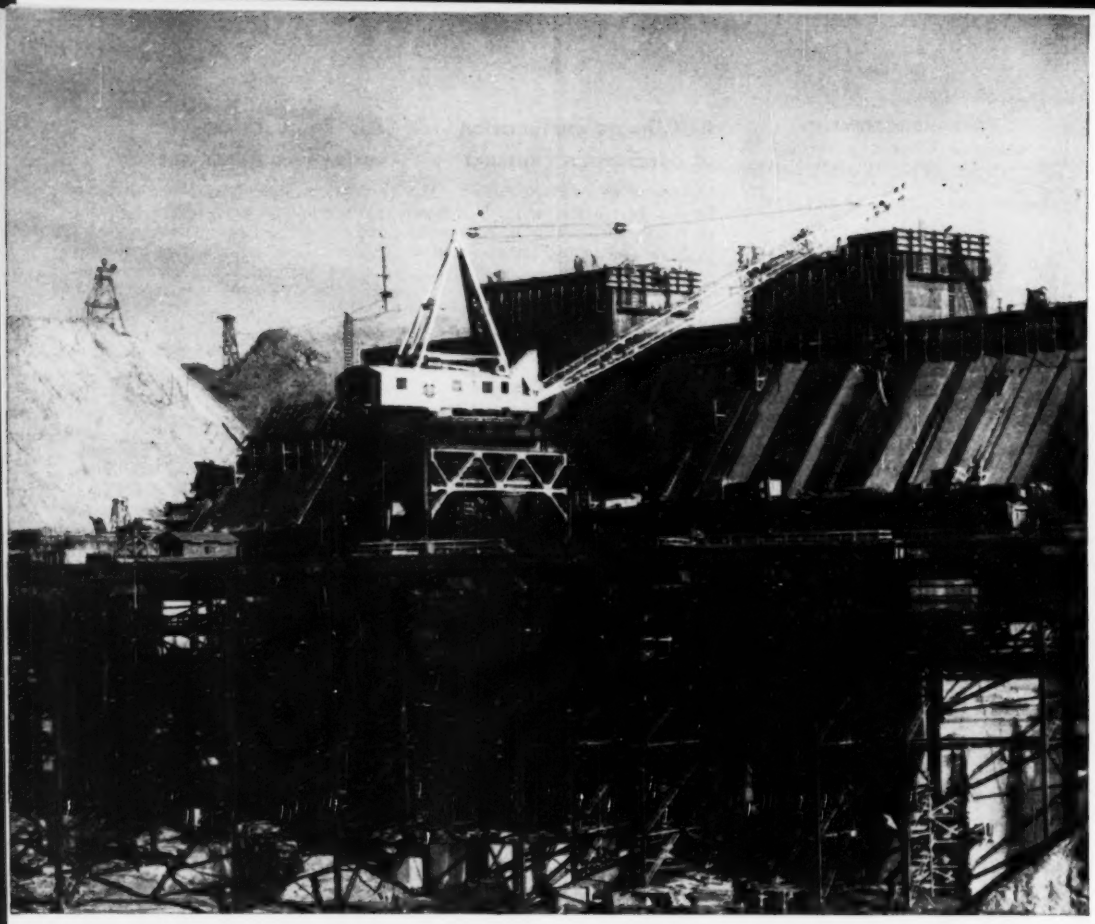
Full details as well as applications may be obtained by writing the Commanding General, Headquarters, First Air Force, Fort Slocum, N. Y.

St. Croix River bridge low bidder announced

A bid of $804,305, submitted by the Industrial Contracting Co., Minneapolis, was recently accepted for the substructure of a new highway bridge at Hudson, Wis.

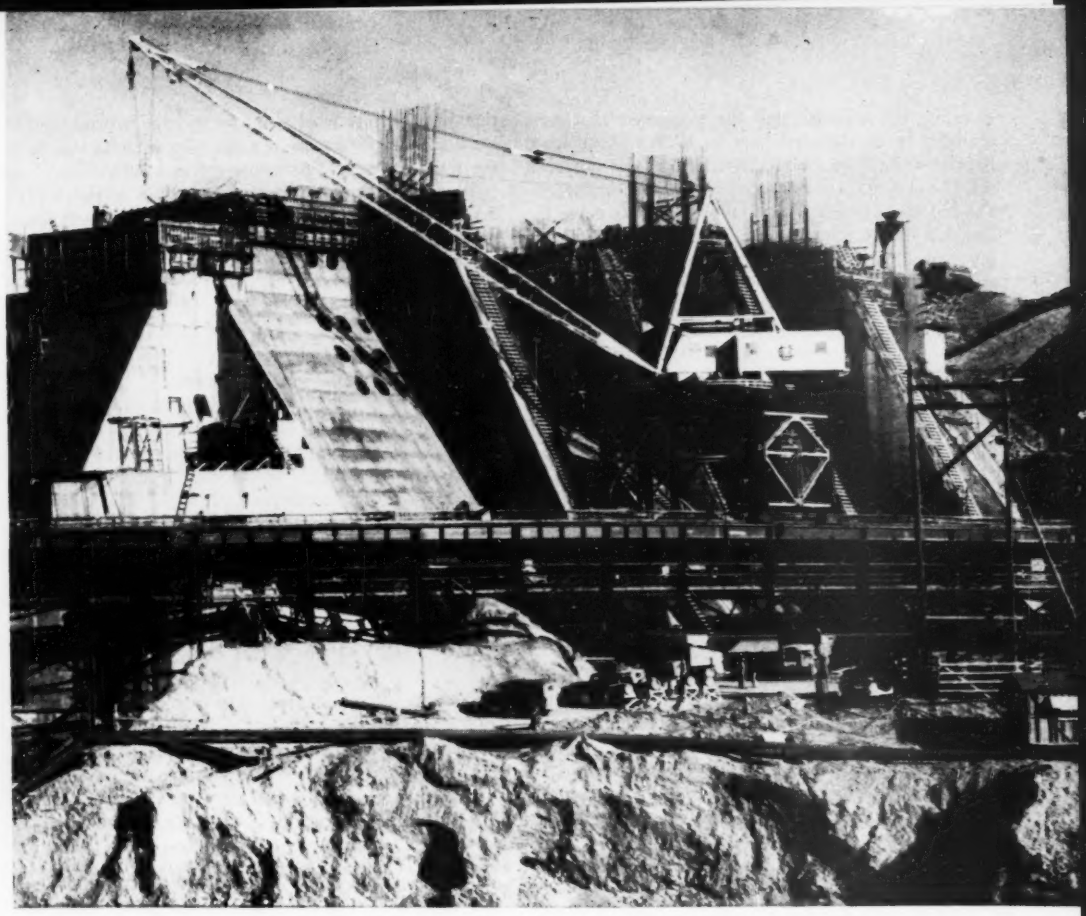
The $4,000,000 interstate bridge will replace a present toll crossing and is expected to be completed in 1950. Bids on the substructure were opened at the Wisconsin capitol by highway commissioners of both states.

SWIFT WATERS FOIL PIPE LAYING—Tugboats and workers failed in this attempt to cross the Missouri River with welded steel, 22-in., crude oil pipeline. This is part of the $25,000,000 Oklahoma-Illinois project of the Shell Pipe Line Co. and Texas Pipe Line Co. Another attempt soon will be made to cross the 3,200-ft. wide stream. (Acme Photo)



CONSTRUCTION TODAY

A Survey and Forecast of Civil Engineering and Construction in 1948 and 1949, Being a Report on the Times We Live In and the Events That Shape Them.



DAVIS DAM represents engineered public works, a type of construction that expanded in 1948 and will continue to grow in 1949.

IN 1948 the construction industry regained its balance. The demand for its services continued to resemble a continuous series of five-alarm fires, but its various components had finally marshalled the means to fight them—not fully, yet to sufficient degree to keep from being pushed around. In 1949, therefore, the stage is set for the industry to recover its bearings, and then to concentrate its efforts more effectively than at any time since the war.

Materials production in 1948 increased until only spot shortages remained. Labor raised its productivity and stayed on the job. Equipment manufacture met demand in the majority of items. The cost rise ceased to accelerate, and engineers and contractors began to turn in estimates and bids that were close enough to suggest that they related to the same job. It was a year in which the insanity of a sellers' market began to be replaced by the less barbarous bargaining of a buyers' market.

In 1949 the strategy is to make good the gains of the last year; to stop cost rises, and roll them back if possible; to step up efficiency and, above all, to exercise the courage and ingenuity that has won so many construction battles in the past. Stabilization of costs and the opportunity for full focus of our previously-diverted mental faculties on the job itself will provide 1949 with two advantages that the other postwar years have lacked.

TOTAL CONSTRUCTION contracts in 1948 reached $17.4 billions of which engineering construction contracts reported by this journal accounted for $7.2 billions. Both figures are up 25 percent over 1947.

Total construction set an all-time record in dollars, and engineering construction was only 10 percent under its wartime peak. However, because the spending money used was inflated, the actual amount of physical construction still trailed the famous years of 1928 and 1929.

In terms of the prewar dollars of 1939, for example, 1948 construction volume was 18 percent less than in 1929. Reason: activities other than construction were

diverting the materials and the manpower that were available to construction back in 1929. What could have been done in a physical sense had this not been so? The best measure of the industry's physical capacity was provided in 1942 when construction was made the king pin of the economy. Then ENR's physical volume index reached 480, 50 percent more than in 1929, and 90 percent above last year. In 1948, that would have been $33 billions worth of construction.

Somewhere between this artificial wartime figure and the $17.4 billions of contracts in 1948 is the capacity of the construction industry under today's economic conditions.

Our estimate for 1949 is $18 billions plus, a rise of 4 percent. For engineering construction alone, 1949 contracts should total about $7.9 billions, which is 10 percent more than last year. With housing past its peak, heavy engineering construction will be this year's leader. And there are plenty of projects to work on; ENR's measured backlog of proposed jobs totaled $43.2 billions at the beginning of the year, enough to support 6 years of heavy construction at the 1948 rate.

SIGNIFICANCE scarcely resides, however, in the size of the cash drawer. It is the disposition of the dollars that counts. The details of what was accomplished in 1948 are reserved for later pages in this issue. What is required here, by way of introduction, is characterization, the better to discuss trends that will determine or influence the shape of things to come in 1949 and later.

As in each year since the war, housing dominated the construction picture. Some 75,000 more units were started than in the previous year, putting the total, about 925,000, just behind the record year of 1925 to which 937,000 non-farm housing units are credited.

Sometime, the much prophesied million units a year will be built, but it won't be in 1949. The housing emergency is temporarily over. People have roofs over their heads. They are cooling off toward cracker-box shelter at luxury prices. Somewhere around 85 percent of the million a year goal is the prospect for 1949.

The second significant facet of 1948's construction picture was the growth in public works of the engineering construction type. If all types of construction are taken into account there was no change from the previous year—30 percent public and 70 percent private, reflecting the great contribution of private residential building. But in the $7.2 billions of engineering construction, public works represented 50.4 percent, a rise from 44 percent in 1947. This special emphasis on public works will remain as a characteristic of 1949, as both carry-over jobs and new pressures make themselves felt.

These pressures may be recognized in hospital and school programs, in sustained need for water supply and sewage treatment facilities, in the federal government's river basin development plans and in a growing realization that, despite what seem to be large expenditures for highways, we are badly neglecting what should be the top priority field for construction investment.

What happened to construction costs is the final determinant of 1948's significance. They rose over the previous year, but at a slower rate; whereas the rise was 12 percent in 1948, it had been 17 percent in 1947 and 18 percent in 1946. Of particular significance were growing signs of cost stabilization in the late months of 1948. One of these signs was a sharp break in lumber prices. Another was that prices of all other materials were stabilizing under the influence of high production and better supply. And still a third was the apparent elimination of cost-rise contingency items in contractors' bids. This contingency extra ranged anywhere from 10 to 25 percent. If contractors feel they can safely eliminate it, stabilization, even reduction in construction costs, is a certainty for 1949.

WHAT IS IN STORE for 1949 is further revealed by some of 1948's notable events. The Atomic Energy Commission began its billion-dollar capital expansion program. The Federal Power Commission authorized 3,300 miles of gas pipelines, and accumulated applications for 13,500 miles more. The Associated General Contractors and the American Federation of Labor set up machinery to settle jurisdictional strikes without work stoppages. The Missouri Basin Inter-Agency Committee spelled out the details of its six year $2.25-billion river current program while continuing to step up the tempo of its dam building jobs. These were developments of import for the future. And there were others.

Contracts were let for the $14 million dollar Delaware River Bridge at Wilmington. Work began on a 100-mile eastward extension of the Pennsylvania Turnpike. Bids were taken on an aluminum arch bridge and a prestressed-concrete girder bridge. The U. S. Public Health Service set up 14 river basin offices as a prelude to a huge program of stream pollution abatement. Both concrete and asphalt runways were built to take 300,000-lb. airplanes. Canal and dam contracts for the Columbia Basin power and irrigation project multiplied, and included some 1,350-sec.-ft., pumps, the largest ever. Prefabricated house companies got an allocation of 59,000 tons of steel. And the Building Officials Conference of America and the Pacific Coast Building Officials Conference agreed to work together, lending hope for building code advance.

These are some of the highlights that illuminated the 1948 picture. They are among the factors that make it possible to hazard the following guesses as to 1949 activity: public buildings up 30 percent; highways up 17 percent; irrigation and flood control up 15 percent; sewerage up 10 percent; bridges up 5 percent; waterworks up 4 percent; industrial buildings up 5 percent; pipelines, tunnels and other miscellaneous work up 10 percent; and commercial buildings and mass housing

EQUIPMENT MEN saw the return of a buyer's market in 1949. Even though heavy items like these weren't being made fast enough to satisfy the contractors, many lighter lines loosened up in 1948.

will exhibit no change in total volume. Materials, machines and men are the necessary ingredients of these gains. Are they available?

Materials Supply Improves

SHORTAGES OF BUILDING MATERIALS, which had hampered construction operations since the end of the war, were alleviated in 1948, as building materials production broke all records. Toward the close of the year, in fact, supply and demand were more nearly balanced than at any time since 1945, except for some local shortages. Expansion of production facilities for some products and operation of existing plants at higher rates resulted in the creation of inventories at distributors' levels for the first time since the war ended. Extended to more lines in 1949, this trend for supply to overtake demand will help eliminate one of the most burdensome and cost-increasing factors in current building construction.

The probabilities on materials supply line up about as follows: Steel will continue tight this year, but a favorable factor is that the waiting period for fabricated structural steel is steadily decreasing. It is highly probable also that cement will be available in sufficient amounts, production having reached an all-time high in October. Construction lumber, too, appears to be in ample supply. No surplus of millwork is reported, but the backlog of orders on hand has been steadily decreasing. With the improvement in nail production, local shortages will be less common and less severe than last year. Gypsum board and lath, roofing materials, building board, insulation, plumbing fixtures, brick and tile will probably be available as needed. Steel pipe and reinforcing bars, however, may remain difficult to obtain for some time, whereas the supply of cast iron pipe has shown improvement.

Easing of supply has not, in general, been accompanied by price declines. In fact, with the exception of lumber and paints, building material prices resumed their upward trend, despite price hesitancy accompanying the general break in the commodity markets in Feb., 1948. Lumber prices have been on the decline since last summer. Paints have been virtually unchanged in price for about a year. But the prices of other building materials reached all-time highs at the end of 1948 and, for some items, continued upward. Current levels, however, give all indication of being peaks. In 1949, many prices should decline, like lumber, or level off, like paint.

Pricing System Challenged

ONE OF THE SPECTACULAR EVENTS of 1948 occurred April 26 when the U. S. Supreme Court ruled against the basing-point delivered-price system used by the cement companies. The court said that the system resulted in price discrimination between purchasers, that it was maintained by concerted action and that it, therefore, restrained competition. The apparent result was to outlaw delivered prices in favor of mill prices, with the customer paying the freight previously absorbed to greater or less degree by the manufacturer. Later interpretations seem to say that delivered prices

may be used in individual situations to meet competition, but that they may not be resorted to on a systematic zonal basis.

The net result is widespread confusion not only in the cement industry, but in all others using delivered-price systems, including steel. These two important construction industry suppliers are now selling f.o.b. mill. The consequences to contractors are many. They must become freight rate experts. In figuring bids for a job, they must take the chance that a competitor will be able to buy his materials cheaper. And they must run the further risk that the source of supply that they figured on may not be available when the time comes to ask for delivery, and that a more expensive source will have to be used.

How disadvantageous these consequences may prove to be will be clearer during 1949 as more experience with the new pricing system becomes available. In the meantime, in the industrial field, some companies are beginning to establish new plants closer to sources of material supply, as for example steel. In the cement field, the tendency would be for the reverse to happen —for cement companies to establish new plants nearer large consuming markets. So far this has not happened, nor is it likely to happen in 1949. There is still a chance that Congress eventually will do something to restore freedom in selling practices to American industry, with proper safeguards against and penalties for collusive price fixing. But the prospect for legislation during 1949 is not very good.

Equipment Buyer's Market Returns

IN ADDITION TO a better materials situation, the familiar post-war shortage of construction machinery all but disappeared by the end of 1948, as a result of two factors: Continued increases in output and sales, and shrinkage in demand.

During the year, shovels in the ¾-1½-yd. range, and all but the heaviest tractors and graders joined small shovels and other production equipment on the immediate-delivery list; and supply of the big machines now rapidly approaches the demand. Custom-made items like weigh-batchers and giant draglines still are tight.

Manufactured output increased 10 percent in dollar volume during 1948, while the price index increased 7 percent. More than the net volume increase remained on the domestic market, however, because the volume of exports decreased somewhat. Total sales, reflecting transactions in both new and used equipment, increased more spectacularly, from $800 million to $1 billion. Although the majority of sales were new, activity in used equipment (about 50 percent over 1947) obviously was most significant in the expanded turnover.

One of the more important signs of shrinking demand was tied in with the used-equipment upswing. Not only were contractors trading instead of buying outright, but they were demanding higher allowances more frequently than they had during the previous year. Credits on machines were less liberal and collections were slower. Other cautious moves included inventory reductions by distributors and increased numbers of requests for rental-purchase options by contractors.

Even with this easing in the construction equipment market, however, it is doubtful whether the over-all price index will go down much in 1949. Manufacturers' tendencies to reduce profits in order to meet competition will be counteracted by increased labor and steel costs. Equipment distributors and manufacturers alike expect some regional sales decreases (as much as 25 percent in one area). These decreases will be partly in response to a leveling-off in the construction curve, and partly in reaction to the 1946-48 wave of buying to replace worn and non-standard wartime machines.

It all adds up to a buyer's market in 1949. And, as if in well-timed anticipation of the day when the buyer again could pick and choose, the greatest display of construction equipment ever assembled took place in Chicago in July. There, at the Road Show, thousands of contractors, engineers and public officials from all over the United States and abroad set their sights and made their plans for an unparalleled machine age of construction.

Worker Productivity Improves

A MODERATE INCREASE in worker productivity in 1948 can be ascribed to disappearing shortages among the three construction elements—materials, machines and men—a growing will to work and increasing good judgment in management. With eight percent more workers, the construction industry did twelve percent more work.

Shortages of help in all but the trowel trades ceased to exist in most areas during the year. Average employment by contractors was 2,000,000, which was 140,000 more than the 1947 average. And, construction wage rates rose 10 percent. Such signs of healthy conditions —more men getting more pay for more production— were welcome.

On the other hand, apprenticeship, the normal and logical source of new skilled workers, failed to expand uniformly during the year, despite sincere efforts by contractors, public agencies and national unions. In fact, after jumping from 116,000 to 131,000 in the first four months, the total number of apprentices reported to the Bureau of Labor Statistics remained almost constant during the last eight months. Apprentice graduations amounted to 9,200. This year the number will rise to four or five times that figure as indentures end for most of the first full-year postwar group. Total employment, nevertheless, will not exceed that of 1948.

Applicability of Labor Laws

THE CURRENT YEAR also should see clarification of legal problems relating to labor that became urgent in 1948, principally whether or not federal labor laws applied to the construction industry.

NEW SUBSCRIPTION ORDER

Please enter my new subscription for Engineering News-Record for THREE YEARS at $12. (If you prefer, check here ☐ for 1 year at $6).

Name.....

Mailing Address.....

City..... Postal Zone..... State.....

Company..... Position.....

Nature of Business.....

Foreign Rates (1 Year)—Canada $7 — Latin America $10 — All Other $20

3-17-49

Postage Will be Paid by McGraw-Hill Pub. Co.

No Postage Stamp Necessary if Mailed in the United States

BUSINESS REPLY CARD

First Class Permit No. 64 (Sec. 510, P. L. & R.) New York, N. Y.

4¢ POSTAGE WILL BE PAID BY —

McGRAW-HILL PUBLISHING CO., Inc.

ENGINEERING NEWS-RECORD

330 WEST 42nd STREET

NEW YORK 18, N. Y.

...e big post-war push was

...1) to obtain NLRB ...how the law applied ...rrective legislation by

...ablished a confusion ...ility and non-applica... ...e the one most likely

Second, the older wage-hour law, which for a decade had been almost innocent of construction implications, was found by the Supreme Court to contain provision for overtime-on-overtime wage payments—a joker that took the law out of the minimum-pay category and applied it to all wage rates. This threw the whole industry into confusion, for if it applied to construction, contractors would have to pay more for most work, and they would have to add costly accounting procedures; and unions would have to alter wage agreements fundamentally to maintain complex differentials among the trades.

The Taft-Hartley problem, though tested by a few cases, was left mostly unsolved. On the chance that the prohibition of jurisdictional strikes and secondary boycotts might apply to all construction, unions apparently tried to avoid those practices. Jurisdictional strikes were almost non-existent during the year, a situation that was welcome to both management and labor.

But the overtime-on-overtime problem appeared no nearer to solution in December than it had been in the middle of the year when it first came up. Employers and unions did make minor contract alterations—revision of the work week to make it start on Monday, for instance—to avoid some of the decision's effects, but

Now, as the 81st Congress sits it appears that both basic laws will extend to virtually all construction, by making those laws apply to activities "affecting commerce." The extension will be effective because the historic growth of the commerce power has made that instrument will-nigh limitless in potential. The power to nip jurisdictional strikes and secondary boycotts will continue despite deletion of the word "injunction" (hated by Labor) from the Taft-Hartley law's successor. And construction will be exempted specifically from the overtime-on-overtime decision's effect.

Hence, if predictions are correct, although labor laws will embrace all construction, the 1948 confusion with those laws will disappear in 1949.

Innovations in Building

THROUGHOUT 1948, newspapers and popular journals showered scathing criticism on the building industry, blaming high costs (particularly for housing) on obsolete construction methods and archaic building codes. In turn, the Construction Industry Information Committee unleashed a flood of news releases that pointed with pride to the industry's achievements, and many communities, re-examining their regulations, looked around for a model performance-standards code

may be used in individu
tion, but that they may
matic zonal basis.

The net result is wid
the cement industry, bu
price systems, including
construction industry st
mill. The consequences
must become freight rat
a job, they must take the
be able to buy his mate
run the further risk that
figured on may not be a
to ask for delivery, and
will have to be used.

How disadvantageous
to be will be clearer d
with the new pricing sys
meantime, in the indus
beginning to establish r
material supply, as for
field, the tendency woul
—for cement companies
large consuming markets
nor is it likely to happen
that Congress eventuall
freedom in selling pract
proper safeguards agai
price fixing. But the
1949 is not very good.

Postage Will be Paid by McGraw-Hill Pub. Co.

No Postage Stamp Necessary if Mailed in the United States

BUSINESS REPLY CARD
First Class Permit No. 64 (Sec. 510, P. L. & R.) New York, N.Y.

4¢ POSTAGE WILL BE PAID BY —

McGRAW-HILL PUBLISHING CO., Inc.
ENGINEERING NEWS-RECORD
330 WEST 42nd STREET
NEW YORK 18, N.Y.

NEW SUBSCRIPTION ORDER

Please send Engineering News-Record for THREE YEARS at $12. (or for 1 year at $6 ☐) to:

Name .....

Mailing Address .....

City ..... Postal Zone ..... State .....

Company ..... Position .....

Nature of Business .....

And Send Bill to:

Name .....

Address .....

Foreign Rates (1 Year) — Canada $7 — Latin America $10 — All Other $20

3-17-49

Equipment Buyer's

IN ADDITION TO a better materials situation, the familiar post-war shortage of construction machinery all but disappeared by the end of 1948, as a result of two factors: Continued increases in output and sales, and shrinkage in demand.

During the year, shovels in the ¾-1½-yd. range, and all but the heaviest tractors and graders joined small shovels and other production equipment on the immediate-delivery list; and supply of the big machines now rapidly approaches the demand. Custom-made items like weigh-batchers and giant draglines still are tight.

Manufactured output increased 10 percent in dollar volume during 1948, while the price index increased 7 percent. More than the net volume increase remained on the domestic market, however, because the volume of exports decreased somewhat. Total sales, reflecting transactions in both new and used equipment, increased more spectacularly, from $800 million to $1 billion. Although the majority of sales were new, activity in used equipment (about 50 percent over 1947) obviously was most significant in the expanded turnover.

One of the more important signs of shrinking demand was tied in with the used-equipment upswing. Not only were contractors trading instead of buying outright, but they were demanding higher allowances more frequently than they had during the previous year.

more work.

Shortages of help in all but the trowel trades ceased to exist in most areas during the year. Average employment by contractors was 2,000,000, which was 140,000 more than the 1947 average. And, construction wage rates rose 10 percent. Such signs of healthy conditions —more men getting more pay for more production— were welcome.

On the other hand, apprenticeship, the normal and logical source of new skilled workers, failed to expand uniformly during the year, despite sincere efforts by contractors, public agencies and national unions. In fact, after jumping from 116,000 to 131,000 in the first four months, the total number of apprentices reported to the Bureau of Labor Statistics remained almost constant during the last eight months. Apprentice graduations amounted to 9,200. This year the number will rise to four or five times that figure as indentures end for most of the first full-year postwar group. Total employment, nevertheless, will not exceed that of 1948.

Applicability of Labor Laws

THE CURRENT YEAR also should see clarification of legal problems relating to labor that became urgent in 1948, principally whether or not federal labor laws applied to the construction industry.

HOUSING OF ALL TYPES continued to be the most significant factor in the construction picture, but the big post-war push was over. This is Park Forest, Ill., where 3,010 units were under way during the year.

First, the new Taft-Hartley law had leveled its guns at the unions' pet trouble-makers, the jurisdictional strike and the secondary boycott. If construction was in the stream of interstate commerce, and therefore subject to the Taft-Hartley law, constructors could obtain injunctions against these trouble-makers, and thereby avoid slow-downs and stoppages that previously were beyond the constructors' control.

Second, the older wage-hour law, which for a decade had been almost innocent of construction implications, was found by the Supreme Court to contain provision for overtime-on-overtime wage payments—a joker that took the law out of the minimum-pay category and applied it to all wage rates. This threw the whole industry into confusion, for if it applied to construction, contractors would have to pay more for most work, and they would have to add costly accounting procedures; and unions would have to alter wage agreements fundamentally to maintain complex differentials among the trades.

The Taft-Hartley problem, though tested by a few cases, was left mostly unsolved. On the chance that the prohibition of jurisdictional strikes and secondary boycotts might apply to all construction, unions apparently tried to avoid those practices. Jurisdictional strikes were almost non-existent during the year, a situation that was welcome to both management and labor.

But the overtime-on-overtime problem appeared no nearer to solution in December than it had been in the middle of the year when it first came up. Employers and unions did make minor contract alterations—revision of the work week to make it start on Monday, for instance—to avoid some of the decision's effects, but the best attack seemed to be: (1) to obtain NLRB determinations as to whether and how the law applied to specific jobs; and (2) to urge corrective legislation by the 81st Congress.

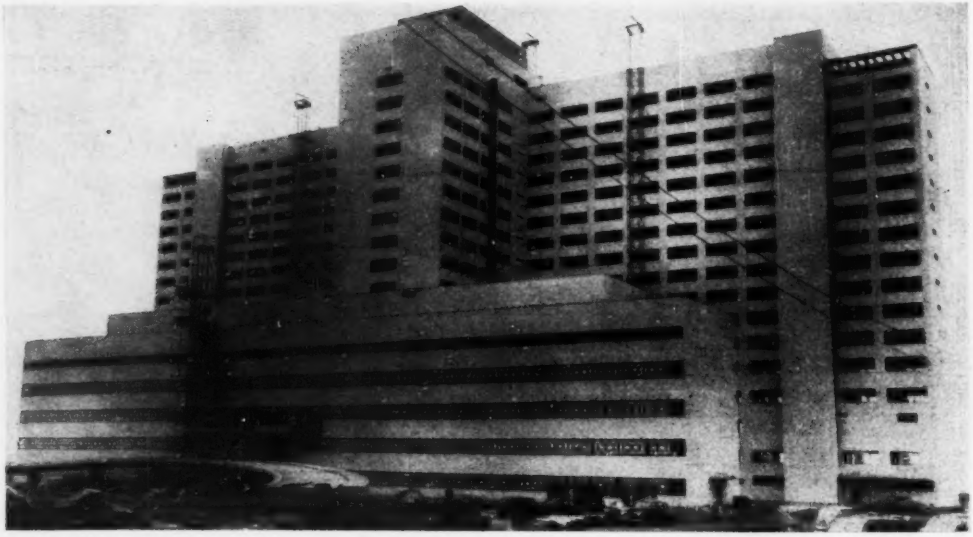
NLRB job determinations established a confusion rather than a pattern of applicability and non-applicability, so the second attack became the one most likely to succeed.

Now, as the 81st Congress sits it appears that both basic laws will extend to virtually all construction, by making those laws apply to activities "affecting commerce." The extension will be effective because the historic growth of the commerce power has made that instrument will nigh limitless in potential. The power to nip jurisdictional strikes and secondary boycotts will continue despite deletion of the word "injunction" (hated by Labor) from the Taft-Hartley law's successor. And construction will be exempted specifically from the overtime-on-overtime decision's effect.

Hence, if predictions are correct, although labor laws will embrace all construction, the 1948 confusion with those laws will disappear in 1949.

Innovations in Building

THROUGHOUT 1948, newspapers and popular journals showered scathing criticism on the building industry, blaming high costs (particularly for housing) on obsolete construction methods and archaic building codes. In turn, the Construction Industry Information Committee unleashed a flood of news releases that pointed with pride to the industry's achievements, and many communities, re-examining their regulations, looked around for a model performance-standards code



VETERANS HOSPITAL, at Fort Hamilton in Brooklyn, is one of several such facilities built by the government. Twenty hospitals costing $145 million, in the VA $1.1 billion program, were put under contract last year.

that could be used as a basis for useful revisions.

Meanwhile, high construction costs kept designers and builders on their toes. The situation was favorable for the introduction of new materials and methods.

Here are some of the more significant construction techniques that came to the fore in 1948: Placing of concrete by cranes on the ground directly into floor-slab forms in buildings up to 14 stories high; mechanization of roofing operations, such as the pumping of tar or pitch to the roof, and the laying of felts by machine; and prestressing of a warehouse concrete floor.

Perhaps the greatest ingenuity was shown in wall construction. Here, with the continuation of the trend toward prefabrication, sandwich walls made of various materials were introduced; even when they were more expensive than conventional materials, there was economy in their use due to savings in construction time and labor. Also, these walls are thinner than conventional walls and generally require less maintenance. They consist mostly of exterior facings of aluminum, stainless steel, asbestos-cement or dense concrete, and back-ups of carbon steel, asbestos-cement or concrete, with a core of rigid or fiber insulation.

With respect to conventional wall materials, there has been a trend toward greater use of vacuum processing and lifting, and of tilt-up construction. In either case, walls are cast horizontally and then raised into position when hardened.

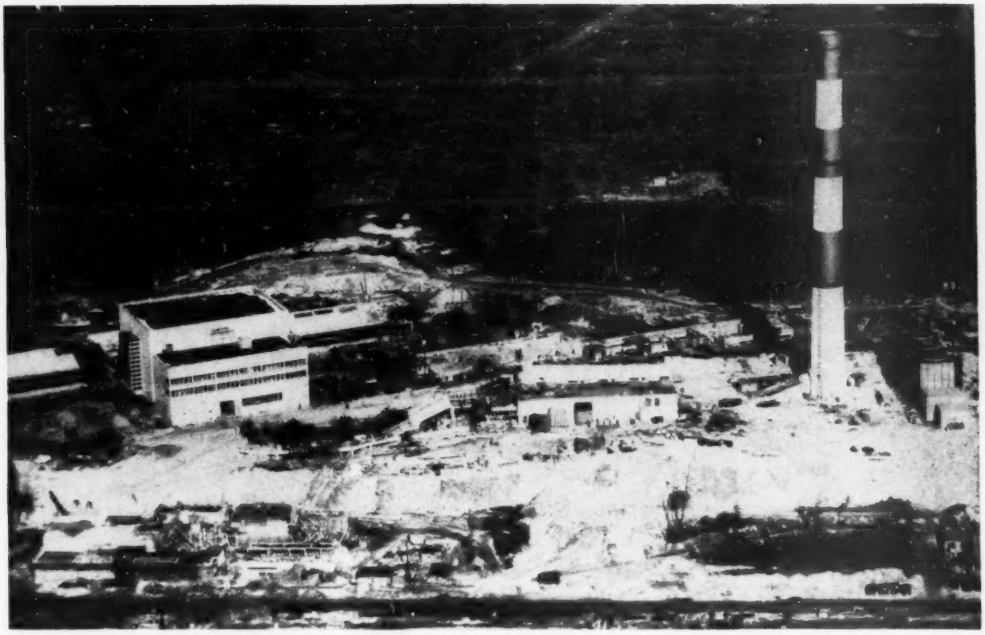
Several innovations in structural framing aimed at cutting costs are also significant. For example, in 1948 standardized welded connections for steel beams were introduced. A new type—"umbrella"—roof truss was tried for a New Orleans factory and found economical. And a four-story building was erected with a frame of precast concrete at a cost competitive with fireproofed structural steel.

The growing use of lightweight aggregates in concrete and plaster is having a marked effect on the weight of buildings. On the 30-story John Hancock office building in Boston, for example, the weight of steel alone was reduced 2,000 tons by substituting vermiculite for sand and using steel floor decking. The total dead weight of the 12-story Equitable Building in Portland was cut 1,200 tons with perlite in the plaster while on the 9-story Prudential Building in Los Angeles this weight reduction was 15,000 tons with vermiculite in the plaster and pumice in the concrete.

An innovation in the fire protection of open stair wells was introduced in the unique Terrace Plaza Hotel building in Cincinnati. In the 7-story department store base under the hotel, the escalators are protected by air-exhaust and sprinkler systems. The air-exhaust will halt the updraft of fumes, and the sprinklers will eliminate convection currents by spraying water to cool the heated air. No inclosures are needed.

Housing Up, Prefabs Disappointing

PREFABRICATION, which many had looked to as the solution to the housing shortage, turned in a disappointing performance again. Only about 40,000 units —less than one in twenty houses erected in 1948—came from the plants of recognized manufacturers. There is, however, one bright spot in the picture—the start of production on the Lustron Corp. house, a two bedroom unit with a light-gage steel frame and porcelain enameled steel walls and roof. The plant at Columbus, Ohio,



ATOMIC CONSTRUCTION had its busiest year since the secret boom of World War II. At Brookhaven Laboratory, on Long Island, the Atomic Energy Commission is building this nuclear reactor complex. The 320-ft. stack is part of the air cooling system

has a capacity for mass-fabricating 45,000 of these dwellings a year.

While prefabrication was slow in getting moving, conventional house construction came near beating previous records. About 925,000 starts on new permanent dwellings were recorded in 1948. Of these, 910,000 were privately financed, as compared to the all-time high of 937,000 in 1925 and the 850,000 in 1947.

Houses in 1948 cost about 15 percent more than during the previous year, the total value exceeding that of 1947 by $1.7 billion. All told, $7 billion was spent for private residential construction in 1948.

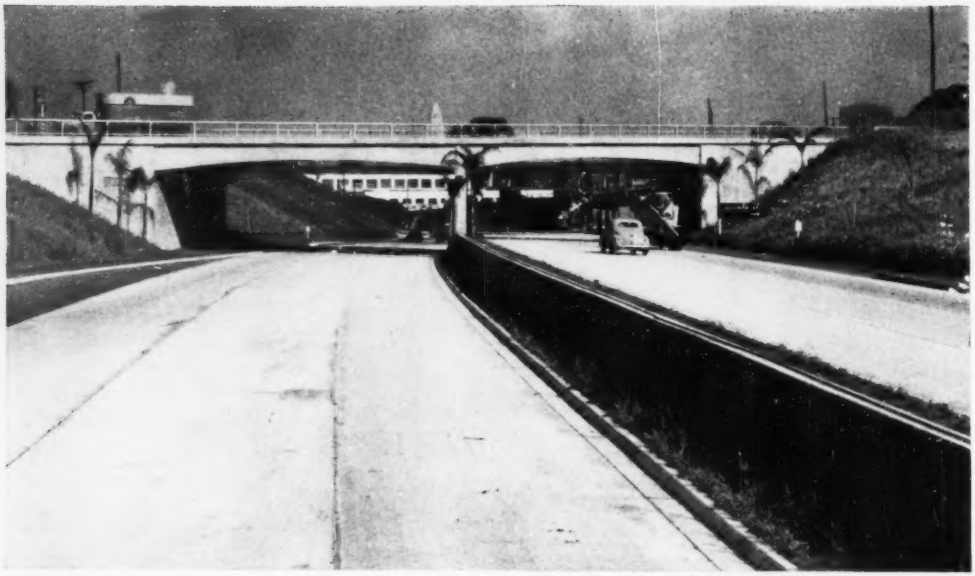
Toward the end of 1948, home buyers became more selective—apparently an indication that the edge had been taken off the housing shortage. Some price declines were noticeable. The National Association of Home Builders encouraged its members to build "economy" houses to tap the low-price market. Thus, the outlook for 1949 residential volume is that it will be smaller than in 1948—probably by about 5 percent.

Housing Laws to Ease Credit

THE 80TH CONGRESS, anxious to keep private residential construction going full blast, was cautious in its attitude toward housing legislation. Afraid of inflation, the Congress nevertheless saw a need for counteracting the tightening of credit in the mortgage market but turned thumbs-down on the omnibus Taft-Ellender-Wagner Bill, which was intended to encourage construction of 15,000,000 dwelling units in 10 years. Rent control was continued to March 31, 1949, with increases up to 15 percent permitted on voluntary agreement by tenants. To facilitate the financing of homes, particularly for ex-servicemen, approval was given a bill authorizing the Federal National Mortgage Association —a subsidiary of the Reconstruction Finance Corp.—to buy up $840,000,000 worth of mortgages insured by the Federal Housing Administration and by GI loans. And an act was passed to revive rental-housing mortgage insurance under Title VI of the National Housing Act. This bill furnished mortgage-insurance assistance to on-site fabrication and to manufacturers and dealers in prefabricated housing. It also established a division within the Housing and Home Finance Agency to promote standardization of building codes and the development of standardized dimensions and methods for assembly of building materials and equipment.

Assisted by this legislation, the FHA in 1948 insured mortgages covering 400,510 units, the largest volume of any year in FHA history—twice as large as the volume in 1942, the previous high. Over 70 percent of the units were in new housing. By the end of the year, total insurance written by the FHA since the beginning of its operations in 1934 amounted to $14.5 billion. About half of this is still in force.

The election of a Democratic president and Congress last November points to probable passage of the public-housing and slum-clearance portions of the T-E-W



FREEWAYS, EXPRESSWAYS, PARKWAYS—limited access roads by several names, popped up in new places and spread in old, in response to pressures of increasing traffic congestion. Southern California's Santa Ana Freeway is one of them.

Bill, continuation of rent control, liberalization of RFC's secondary market for mortgages, and extension of FHA's rental housing program. There is a chance that government's support of home building may be switched mainly to rental housing. There is also a possibility that further encouragement will be given to housing research.

Toward Better Housing

IN THE MEANTIME, private industry has acted to stimulate research. Last month, the National Academy of Sciences and its operating agency—the National Research Council—organized a Building Research Advisory Board to do for building construction what the Highway Research Board has been doing for roads for the past 30 years.

This new board's initial program is set up on a 5-year basis, but the work is expected to be extended beyond that limit and to become a permanent function of the National Research Council. Funds to finance its activities are being raised by the Research Activities Committee of the Construction Industry Advisory Council, created under the aegis of the U. S. Chamber of Commerce.

Without the aid promised in the T-E-W bill, housing research in 1948 nevertheless was far from inactive. At the University of Illinois, for example, the Small Homes Council, carrying out time studies on the industry-engineered house, found money savings in preassembly of the parts and in the use of a roof truss instead of conventional beams. The Housing and Home Finance Agency investigated and reported on various technical problems, such as prevention of condensation in attics and economy of basements. At Massachusetts Institute of Technology, a house was built to investigate the feasibility of solar heating. National Bureau of Standards engineers developed a structural design procedure for small houses and published performance standards for incorporation in building codes. But probably the greatest amount of research went into the basic building code of the Building Officials Conference of America, which is being proposed as a national model. This document is expected to be available by mid-1949.

The need for a model code was demonstrated by an NBS survey. It showed that nearly half of all U. S. cities are either without a building code or are operating under regulations ranging from 20 to 44 years in age.

Some large cities are modernizing their codes, but the smaller communities apparently cannot afford the cost and undoubtedly would benefit from model regulations. Many are eagerly awaiting the BOCA code, which is claimed to be a performance-standards type. Actually, however, the building officials have been unable to prepare a purely functional code, because insufficient data are available. They are also fearful that a code of this type might be unenforceable. It is quite possible that if this fact were more widely known, more communities would cease waiting for a perfect code and modernize their regulations immediately by adopting one of the better codes now available, such as the

Uniform Code of the Pacific Coast Building Officials Conference, a new edition of which will be available this year.

School Construction Backlog Huge

ASSOCIATED WITH the housing shortage has been a school shortage, which still is critical. It arose as a result of a long period of underbuilding, a rapid increase in enrollments, migration of population during and after the war and the need for organizational changes to attain larger and more efficient administrative units and expanded curriculum—objectives difficult to achieve in outmoded structures. At the college level, facilities of many institutions have been overwhelmed by students enrolled under the GI Bill of Rights, but inadequacy is also apparent in grade and intermediate schools, and will become more so when the large crop of babies attains school age.

Expansion of educational building started almost with the end of hostilities and continued right on through 1948. From Jan., 1946, through Sept., 1948, contracts were awarded for about 7,200 educational projects. Some of this construction was temporary to accommodate student veterans, but most was in permanent new buildings, additions and major renovations. The value of public school construction put in place in 1948 alone is estimated at $550,000,000.

Nevertheless, an $11 billion investment in new school plant and equipment is required to overcome the critical shortage of educational facilities, according to the Office of Education of the Federal Security Agency. Many communities have approved bond issues to finance construction programs, but high costs are proving a major deterrent.

Hospital Construction Spurts

A SEVERE SHORTAGE still exists also in hospital facilities. The state plans for hospital construction submitted under the Federal Hospital Survey and Construction Act show that the U. S. and territories (exclusive of Nevada, which has not yet submitted a plan) have a total of 1,024,840 beds. Of these 145,313 are considered unacceptable because of obsolescence, unsuitable design, fire hazard or other failure to meet the standards set up by the agencies administering the program. The states estimate that 897,146 more beds are required.

To diminish this need, Congress approved early last year an appropriation bill for fiscal 1949, providing $60,000,000 in cash and $75,000,000 in contract authority for the hospital program of the U. S. Public Health Service under the Hospital Survey and Construction Act. By Dec. 31, a total of 643 initial project applications had been approved by the surgeon-general. The estimated total cost of projects, which will provide 31,633 beds, amounted to $366,000,000 of which the federal share was $107,000,000.

Meanwhile, the Veterans Administration $1.1 billion hospital program slipped into high gear. Twenty construction contracts were awarded last year to provide 6,925 beds in new buildings at a cost of $145,000,000, and four contracts were placed for 1,090 beds in additions costing $19,400,000. Early this year, following a restudy of 64 individual projects not yet under contract, President Truman ordered a reduction of 16,000 beds chiefly because of inability of the VA to staff even its present hospitals. The VA cancelled 24 hospitals and reduced the size of 14 others.

Atomic Plant Construction

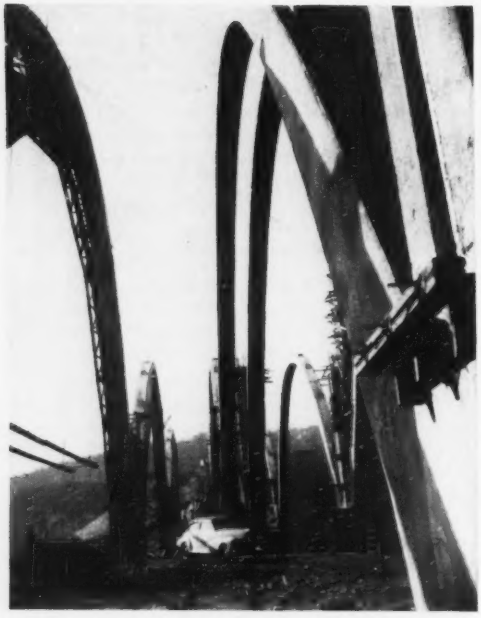
CONSTRUCTION activity far beyond general appreciation took place in the field of atomic energy development in 1948 and is still continuing. Not since the great installations at Oak Ridge, Tenn., Los Alamos, New Mexico and Hanford, Wash. were rushed to completion in complete secrecy during the war years has construction of atomic facilities played such a prominent role. Much of the secrecy still persists, but the Atomic Energy Commission has stated without qualification that it is carrying on the "greatest single construction program in American peacetime history."

Scheduled to cost $700 million dollars, it centers at Hanford, where 15,000 construction workers constitute the labor force, but involves new construction or major alteration at 20 other sites throughout the country. Purpose is to replace temporary war-built facilities, both factories and housing, with more permanent construction, and to enlarge research activities along lines of peaceful applications of atomic energy. Despite this significant nod toward medicine, biology and power production, however, AEC effort is still predominately military. Bigger, better and cheaper bombs remain the objective.

In addition to housing, schools, hospitals, roads and streets at the three permanent communities, new plants and nuclear reactors were built at Hanford as well as warehouses, shops, railroads, bridges and storage facilities for radioactive wastes. Three new laboratories were begun—Argonne near Chicago, Brookhaven on Long Island and Oak Ridge—as well as research centers at Berkeley, Calif., Schenectady, N. Y. and Ames, Iowa. In 1949, this high tempo of construction activity will continue unchecked, and, it may be hoped, under a somewhat more liberal policy of publicity. A program of such magnitude must necessarily involve new methods of design and construction that the whole industry should know about.

Road Work at Record Level

HIGHWAY CONSTRUCTION broke all records for dollar volume of new work done in 1948, but it fell far short of what should have been done. Due to the lowered purchasing power of the dollar, the actual physical accomplishment was only about the average of the prewar years, and no gain was made on the accumulated deficit of the war years. As motor vehicle



MORE LARGE BRIDGES were placed under contract in 1948 than in 1947. This is Pittsburgh's Commercial Avenue Bridge, which will carry the Penn-Lincoln Parkway across Nine-Mile Run.

registrations have risen from 34,472,000 in 1941 to an estimated 40,700,000 in 1948 it is obvious that just meeting the normal depreciation would require an annual mileage of new or reconstructed pavements considerably higher than in prewar years.

Highway work programmed for this year by the state highway departments, according to a survey just made by this journal, will be slightly less than in 1948. That is not encouraging, yet the picture may not be quite as dark as it appears. In the first place, the state highway departments are realistic program makers. Most of them are short of personnel to do the engineering work that must be done to convert preliminary plans into contract specifications and to supervise construction. They have to work against that physical limitation. Then too, the 1949 plans were made in full knowledge of the fact that some critical materials might not be any more plentiful than in the year just past. And at the time they were made, the slight decline in construction costs that now is evident was not apparent.

If there is an improvement in the supply of engineers, if materials are in easier supply and contractors looking for work, the latter part of the year may see a definite upswing in highway contracts.

Looking ahead, there are clouds on the legislative horizon. Both in Congress and the state legislatures there is evidence of growing pressure for more money for farm-service roads; and from the cities is coming a growing demand for more money for badly-needed arterial routes into and through congested areas. Because of the preponderance of rural votes in state legislatures, there is grave danger that the movement to increase the percentage of the total road money that goes to rural roads will succeed just at a time when the shift should be the other way for at least a decade.

Better Built Highways

VIEWED INDIVIDUALLY, the technical improvements in highway design and construction during 1948 do not appear impressive. But, collectively, they add up to a substantial total that will have both an immediate and far reaching effect on roadbuilding. To mention only a few: Thickened edge pavements were abandoned to a large degree, in favor of a uniform thickness of concrete slab. Granular material is used more extensively beneath concrete pavements to reduce frost action and to furnish better sub-drainage. A continuing trend is that of substituting contraction joints for expansion joints in concrete pavement. And ice control by internal heating is getting considerable attention—one notable example being the 500-ft. test section of highway just outside of Ferndale, Mich. where both asphalt and concrete pavements are being kept free of snow and ice, using electric current as the heat source.

Many states concentrated last year on developing flexible pavements using local aggregates, to reduce construction costs. In this connection, equipment manufacturers have developed considerable labor-saving equipment to reduce the amount of high-priced, hand labor on construction. A notable example is a front-end loader, used both on construction and in highway maintenance.

Air-entrained concrete was used more extensively last year as better means were developed for measuring and controlling the amount of entrained air, and as research disclosed more of the structural qualities of the concrete. Better methods of moisture control and soil compaction were developed, resulting in a more stable roadbed with less danger of pavement pumping. Sand-drains, installed to accelerate subgrade consolidation, proved their worth in several instances, and should enjoy more widespread use in the future.

Bridge Building Forged Ahead

BRIDGE CONSTRUCTION forged ahead during 1948 to establish a total of just under $300 million of contracts—representing a 50 percent increase over the 1947 total. This accelerated bridge building program got off to an even better start this year, when $29,700,000 worth of contracts were awarded during January.

In contrast to the previous year, when most of the bridge activity was concentrated in small structures, 1948 saw substantially greater emphasis placed on large

bridges. Notable in this category are the $37,000,000 Chesapeake Bay bridge just above Annapolis; the $40,000,000 Delaware River bridge near Wilmington; the $27,000,000 Mystic River toll bridge near Boston, Mass.; and the $14,000,000 Tacoma Narrows bridge in Washington. The awarding of contracts for these, and other large bridges, indicates increased availability of construction materials and easier credits for financing the work.

Three bridges—two started last year and the other to be built this year—are of special significance to bridge engineers since all represent relatively new concepts of bridge design in the United States. One is the three-span (74-160-74 ft.) prestressed concrete deck-girder bridge to be built in Fairmount Park, Philadelphia. The second is the all-welded five-span (78-100-120-100-78 ft.) continuous steel deck-girder bridge now under construction at Iowa City, Iowa. More welding is being used on bridges, both in the field and in the shop, but fully-welded bridges are the exception. The last of these three new bridges is a 100-ft. plate-girder railroad span of aluminum alloy completed at Massena, N. Y. Its construction is the more significant because of parallel developments in aluminum bridges in other countries: England completed a 121-ft. span double-leaf bascule at Sunderland, and Canada awarded a contract for a 290-ft. arch at Arvida.

Noteworthy in the extreme is the renewed interest in large suspension bridges, none of which has been built since the Tacoma Narrows collapse in 1940. Aerodynamic instability, the cause of this shocking failure, has been countered in the design of the new Tacoma Narrows structure by venting the roadway, by increasing the width-length ratio and by increasing the depth of the stiffening members, which are changed from girders to trusses. These or other special details will be included in the other suspension spans that appeared on the horizon in 1948: the 2,150 ft. Delaware River span at Wilmington, for which foundations are underway; the 1,700 ft. Hudson River span at Kingston for which preliminary plans were completed; the Brooklyn Bridge, plans for whose reconstruction were authorized; and the new San Francisco Bay crossing, studies for which indicate that it will duplicate the existing bridge which contains two 2,310-ft. suspension spans.

Among the smaller bridges that established new precedents during the past year was a concrete structure in Niles Canyon, Calif. consisting of single columns carrying a concrete box girder from which the roadway was cantilevered at either side. Also at Lumberville, N. J. a multiple span suspension footbridge was built utilizing a rope-cable stiffening system. The 240 ft. lift span of the Terminal Island bridge at San Diego is also worthy of mention as setting a new record for height of lift—from 50 ft. underclearance when down, to 175 ft. when raised.

Throughout the bridge field the battle to cut costs by simplifying designs and construction requirements continues, while the use of substitute materials is gradually being discontinued. Noticeable during the latter part of 1948 was a trend back to designing for economy instead of for availability of materials. The high cost of carpentry has had a marked effect on bridge design. The concrete girder bridge, with its large amount of formwork, has just about priced itself out of the market for short spans. For the same reason, more gravity-type abutments and retaining walls are being used instead of cantilevered structures. Large bridge projects continue to be separated into more than one contract, chiefly to speed the work since construction can be started before plans for the entire project have been completed. In contrast, lower bids often can be secured by combining several small bridges into a single contract.

AIRPORT CONSTRUCTION lagged in general, although congestion at some centers urged more work. At Idlewild airport the Port of New York Authority rushed multiple Quonset huts to completion and opened the giant field to overseas operations.

Airport Building Lags

LIKE ROADBUILDING, airport construction is not making the strides that were anticipated for it immediately following the war. At that time Congress authorized $520,000,000 in federal aid to foster the building of more and better airfields to accommodate a rapidly expanding air-transport industry. Part of that expansion has occurred, but cities and towns have been slow in taking up the federal money.

This reticence was due in part to delays in getting the airport construction program organized and in setting up the standards. But much of it appears to result from more fundamental obstacles. Local sponsors of

better airports have had difficulty in getting city administrative bodies or the voters to put up funds to match the proffered federal aid; and air-transport companies have shown considerable reluctance toward agreeing to pay the higher rentals that are necessary to carry the greater investment in better fields. For example, at San Francisco, voters, last fall, failed to approve a bond issue for new runways and an administration building, and at New York the major airlines are in controversy with the Port Authority over the rentals asked for use of the new facilities at Idlewild airport.

In government circles, however, there is considerable optimism over the future outlook. A "National Airport Plan" has been prepared, as called for in the Federal Airport Act of 1946, which covers needed improvements at 4,431 airports. Its total cost would be $985,800,000, of which $441,600,000 would be federal aid. At the end of last year the Civil Aeronautics Administration had entered into contracts for $61,300,000 in federal aid at 528 locations. Jobs at 175 locations had been completed, involving $8,700,000 in federal aid. When work that had been definitely programmed at the end of 1948 is included, the federal aid involved is raised to $106,600,000, bringing the total cost of proposed work under the act to something over $200,000,000.

Railroad Construction Increases

CONSTRUCTION of new railroad facilities reached the highest dollar volume since 1930, according to RAILWAY AGE. The total of improvement projects costing more than $100,000 completed or under way at the end of 1948 rose to $365,000,000, exclusive of highway-railway grade separation work, which is estimated at about $100,000,000. Yard and terminal construction topped the list of new work, signal work was in second place and line revisions followed, there being 54 of these exceeding $100,000 in cost. Bridge work gained in 1948 due to greater ease in getting steel, the total work amounting to $29,000,000. A considerable part of the new construction was an outcome of the large purchases of diesel power made by the railroads in recent years, new or reconstructed engine terminals being required and sidings having to be extended to accommodate longer trains.

Federal Pollution Control

A NEW ERA in stream pollution abatement began on June 30, 1948. On that day, when Public Law 845 of the 80th Congress was signed by President Truman, federal control of water pollution became a reality. This is the culmination of an issue that has been bitterly debated for more than half a century, during which states' rights proponents resisted what they termed an invasion of their policepowers in protecting the health and welfare of the people.

The new law, entitled, "An act to Provide for Water Pollution Control Activities in the Public Health Service of the Federal Security Agency and in the Federal Works Agency, and for Other Purposes", is not intended to by-pass states rights. It recognizes the primary responsibilities of the states in controlling water pollution, and enforcement measures are limited to court action on suits initiated by or with the consent of the states.

Enforcement is only one aspect of the new law. Its broad objective is to encourage the states to take more aggressive action in curbing the discharge of untreated municipal and industrial wastes. To this end, technical and financial assistance is authorized. The latter, for which some appropriations may be expected this year, includes: (1) one million dollars per year for five years to the states for research on industrial waste treatment methods; (2) another million yearly for five years to aid in the financing of surveys and plans for remedial works; and (3) a total not to exceed $22,500,000 yearly for five years for loans to public bodies engaged in the construction of treatment works for sewage and industrial wastes.

To make ready for the time when money becomes available and to provide technical aid, the U. S. Public Health Service has already set up fourteen "river basin" offices throughout the United States. These are being administered from a newly established Water Pollution Control Division in Washington.

Interstate Pollution Abatement

STRONG EVIDENCE that the states have no intention of abdicating any responsibilities for stream pollution abatement now that a federal law is in existence comes from the growth and activity of interstate groups organized for this purpose.

Newest and biggest of these is the Ohio River Valley Water Sanitation Commission, which was formally organized on June 30 after long years of negotiation among the eight states in the basin. Operating in an area of some 200,000 sq. mi., the commission is tackling the problem of coordinating pollution abatement in the most heavily populated and industrialized section of the country.

In New England, too, an interstate agency has begun operations to handle pollution abatement on a regional basis. A New England interstate water pollution control compact was organized in 1947, and during the past year member states have been surveying the situation and gathering data for the development of an integrated program of attack.

One of the most active agencies is the Interstate Commission on the Potomac River Basin, comprising representatives from Maryland, West Virginia, Virginia, the District of Columbia and Pennsylvania. The work of this group has been distinguished, among other things, by the promotion of industrial waste abatement measures. Other agencies that are stimulating action

RAILROAD YARDS were expanded. This is the new Union Pacific 40-track classification yard at North Platte, Neb.

SEWAGE TREATMENT. Eighteen of these 110-ft. dia. digesters were built at Los Angeles' 245-mgd. Hyperion plant.

on a local level include the Interstate Sanitation Commission operating in the New York tidal area, and the Interstate Commission on the Delaware River Basin.

Record Year for Sewage Disposal

EMPHASIS placed on stream-pollution abatement finds its reflection in the amount of money being spent for sewage disposal facilities. The past year, with an all-time record expenditure of $226 million, showed a 29 percent gain over the previous year in dollar volume. Our prediction is that next year will show a further rise of about 10 percent.

Gaining in favor as the most desirable means for financing sewage-treatments works is the so-called sewer-rental or service-charge system. In this connection, the International City Managers' Assn. found that the number of cities (over 5,000 pop.) that levy charges of this kind had increased from 233 to 432 in the course of one year. Big cities like Cleveland, Detroit, Philadelphia and Buffalo average a return of more than $2 million yearly. There is still great variation in rates, and much confusion concerning the manner in which charges should be levied. All of this is now under study by a joint committee of engineers, lawyers and public works officials, a report from whom will prove to be a big boon to municipal authorities.

Sewage Treatment Trends

DRAMATIZATION of the need for increasing world-wide food production—through recent popular books and the publicity attendant on international discussions relating to population growth—has focused attention on conservation of soil fertility. This in turn has stimulated thinking on wider use of sewage sludge for fertilizer. Quite aside from its value as a humus component in soil, it has long been accepted that sewage sludge contains growth-promoting substances and values far beyond those that might be disclosed by simple chemical analysis. Research work at The Johns Hopkins University is now being directed toward discovering the type and quantity of these trace minerals in sludge and what their relation bears to nutrition.

None of this can be considered as simply academic by cities that are operating or planning sewage-treatment works. It may prove to be sound economics to provide facilities for fertilizer production from sludge. This is revealed most recently in an engineering study of the Houston, Tex. situation (ENR April 15, 1948, vol. p. 559), where an analysis of eleven different methods for disposal indicated that fertilizer production would provide an annual revenue of $268,000. Milwaukee and Chicago as well as some smaller cities, have long been engaged in the business of selling sludge for fertilizer.

Rich in promise among possible new treatment methods are the laboratory results achieved at Harvard University using pure oxygen in lieu of air for aeration. Termed "bio-precipitation," the process is biological in its action. The research indicates that when oxygen is employed for aeration, the size of plant required would only be one-quarter that of a conventional installation for treatment.

Not only by research but by group study are the resources of the sanitary engineering profession being made more useful. This is particularly true of the "Committee on Sanitary Engineering and Environment," that operates under the auspices of the National Research Council.

The committee was activated early in the war to render advice and assistance to the armed forces, and

since much of its activity has been related to national defense, it has not given or sought publicity. But its deliberations have had a profound effect on many aspects of sanitary engineering, bearing as they do the stamp of authority from leaders in the profession who comprise the committee. Technical practice related to water chlorination, cross-connection control, disposal of radioactive wastes and procedures for sanitation and housing in Arctic areas are among the matters under the committee's purview.

Radioactive Wastes

AFTER A LONG PERIOD of hush-hush and uncertainty, the Atomic Energy Commission publicly admitted the possibility of environmental health hazards from nuclear fission operations, and has given recognition to the desirability of having sanitary engineers participate in the development of safeguards. In large measure these safeguards relate to means for the disposal of radioactive wastes that might otherwise find their way to the atmosphere, to the soil and to surface waterways.

In contrast to the attitude that prevailed a year ago, spokesmen for the AEC have done much to encourage participation of the sanitary-engineering profession in this new field of industrial waste disposal. Programs of training in nuclear physics have been initiated by the AEC, and research projects are being expedited. However, there has been some reluctance on the part of universities to undertake such research because of the special precautions that are required.

Meantime, the AEC has augmented its staff of sanitary-engineer experts, so that all in all the fission waste problem is being attacked with vigor and foresight.

Malaria Engineering

PUBLIC HEALTH is also being given a lift in the field of malaria control where the application of engineering methods and machines has reached a new high on the island of Sardinia where the Rockefeller Foundation is seeking to determine the possibilities of complete eradication of anophelines. Using DDT as the exterminating agent, and with the aid of planes, flame throwers, fog applicators and other mechanized equipment, an all-out eradication program was started in October, 1947. So successful have been the results that the campaign is being extended to general mosquito elimination. Significance of the campaign rests in the fact that the techniques developed at Sardinia may be the means for casting off the malarial yoke that retards economic development in all tropical areas.

In the United States, said the medical profession this year, malaria may now be considered "a diminishing and retreating disease." One of the notable areas where this statement applies is the Tennessee Valley. Here engineering principles of water-level management in reservoirs have had successful demonstration. Meantime, scientists working in Cuba report they may have a new weapon for fighting malaria. The device is simple enough—an amplifier through which the love-call of the mosquito is sounded surrounded by an electrified screen. Attracted by the siren call, the male mosquitoes are killed on contact with the screen and thus the cycle of egg fertilization is broken.

Waterworks Construction

AN ALL-TIME HIGH in dollar volume of waterworks construction was reached last year, according to ENR statistics. The total was $208 million, a fifty percent gain over the preceding year. Looking ahead, it is conservatively estimated that the prospects for this year are a 4 percent gain in dollar volume over the previous high.

This impressive amount of work reflects the demands that must be met to provide only the essential improvements. Present high costs and the hope that construction prices might soften are holding back many projects that otherwise would be put underway. At least this is the feeling of consulting engineers who report that the pressure put upon them by municipalities to prepare plans for construction has eased off considerably in recent months.

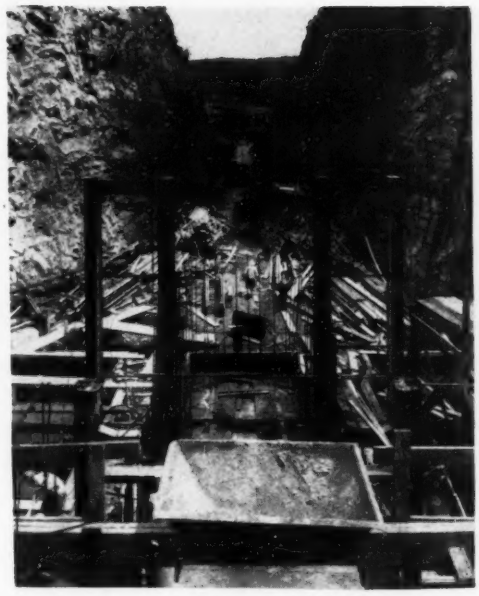
It is significant, however, that municipal voters in recent bond elections tend to approve waterworks proposals more often than other public works schemes. This would seem to indicate an awareness of the fact that procrastination in meeting increased water-consumption demands is poor policy. In this connection, the situation in Detroit illustrates a national trend. There the per capita consumption of water during the last decade has increased 17 percent—from an average of 125 gpd per capita to 146. Detroit has provided the money to take care of this increase, and more and more cities are ready to follow suit. Against such a background, reasonable optimism regarding waterworks construction does not seem to be misplaced.

Aids to Water Quality

ALONG WITH MORE WATER, better water quality represents a parallel unsatisfied demand, and here, too, favorable factors can be found.

Among the new developments in the field of water treatment that claim attention, none is of greater fundamental importance than the work at Harvard University relating to chlorine. In an interim report, the Harvard investigators have pointed to basically new concepts of the action of chlorine in water. These preliminary findings, which explain among other things how chlorine exerts its killing action on bacteria and how chlorine solutions are modified in their action by the presence of ammonia and other organic amines, promise new efficiency in water disinfection.

Also in the province of original research is the continuing study by Chicago municipal water experts in



DELAWARE AQUEDUCT water for New York will start its underground journey at this effluent channel and chamber in Roundout reservoir (background), 85 mi. northwest of the city.

SECOND MOKELUMNE AQUEDUCT in California. The new 67-in. concrete tube will permit transportation of the system's full capacity. Steel line at right is part of first aqueduct.

the application of the electronic microscope for rapid identification of bacteria. As stated in these pages a year ago, the Chicago authorities are seeking to determine if the microscope might supplement or even supplant the normal bacteriological methods employed and thus speed up water-quality test procedures. Latest reports reveal that the technicians are developing a high degree of correlation between visual examinations with the microscope and the bacteriological laboratory confirmations on certain types of bacteria.

Outside the laboratory, water-treatment specialists are looking with interest upon two developments focused on filtration. One of these concerns the application of wartime work with small diatomaceous-earth filters to municipal water supplies. At Mounds, Illinois, an installation has been made looking toward treatment of the entire community supply with these special filters. Meantime, a British firm has completed negotiations with a U. S. water equipment company to market a filtering device based on principles of straining through a micro-mesh steel-wire cloth.

Refuse Problems

EVEN THOUGH a city may have two of its housekeeping problems—sanitation and water supply—under reasonable control, it is always faced with a third that challenges its ingenuity, namely refuse disposal. Currently, officials responsible for this municipal duty have a triumvirate of troubles: Greatly increased amounts of waste cast off by better-living households; severe shortages of labor; and a lack of collection equipment. Adequate funds would, of course, alleviate these troubles, but lacking these, as most cities do, experts feel that a better job might be possible through intensified sanitary education of the public, leading to greater cooperation between householders and the collection agency. Just how effective education can be in easing refuse collection was demonstrated last year in New York City where instruction in high schools, plus newspaper and radio publicity in one district produced significant improvement in street appearance and collection efficiency.

The greatly increased volumes of refuse to be picked up over extended areas point to the desirability of greater compaction in collection trucks. When heavier loads are secured, hauling costs may be expected to fall due to a reduction of trips to the disposal site. Equipment manufacturers are devoting much energy to the perfection of refuse compaction units, and there is a prospect that 1949 will witness great improvement in refuse collection efficiency.

Refuse disposal, too, is receiving increased attention, as attested by the fact that consulting engineers and equipment manufacturers are devoting much thought to better incineration. Both administrative efficiency and better furnace designs are involved. As an example of the former, incinerator "depots" are being

PRIVATE POWER DEVELOPMENT returned to prominence last year. This is the Venice, Ill. plant of Union Electric Co. where a 160,000 kw. addition is under way.

HUNGRY HORSE DAM construction proceeds through the Montana winter night with the aid of 1,500-watt floodlights strung on cables across the canyon.

built which include facilities for centralized control of refuse collection and disposal and better quarters for personnel. In operating techniques, some experts advocate application of industrial-type, materials-handling equipment to improve furnace feeding as well as to eliminate the disagreeable features of residue removal. In one plant, a push-button-controlled clamshell bucket running on an overhead monorail is being used successfully to feed several incinerators from a single receiving pit. Elsewhere, mechanical stoking of furnaces is making a strong bid to reduce manual-labor needs and increase cleanliness. The prevention of smoke and fly-ash nuisance promises to receive more engineering attention in the future. Considerable interest is also being shown in totally inclosed systems that will convey automatically-quenched ash from hoppers to outside dumps or temporary elevated storage. The trend towards still greater mechanization, which applies to new projects as well as remodeling of old incinerators, suggests eventual abandonment of the dirty, costly ash tunnel.

A rotary-kiln rubbish incinerator built in 1947 for Los Angeles, Calif. (ENR Dec. 12, 1946, vol. p. 793) has been accepted finally by the city. An explosion in the conveyor system between a shredder and the rotary kiln caused the delay. Some experts have concluded that excessive handling of heterogeneous rubbish from various sources—too much shredding and conveying before charging a furnace—is extremely dangerous practice.

One current move embraces development of legal authority and financial plans to permit construction and operation of a single incinerator that will economically serve several small, closely-situated communities. Refuse disposal is on the way to being recognized as one of the major problems of municipal management, and in 1949 substantial progress was recorded.

Much Power Development

POWER PLANT CONSTRUCTION, both steam and hydro, continued at an abnormally high rate through 1948, and as a result, in some areas, progress was made toward providing a safe margin between supply and demand. According to the Federal Power Commission U. S. power capacity increased some 8 per cent from 52,211,488 kw to 56,463,509 kw.

In most regions that depend largely on water for their power, low rainfall added to the shortages resulting from no power plant construction during war years. A spectacular example of this was Ontario, a province noted for its water-power resources, where it became necessary to shut down all but essential services for a few hours each day. In Northern California, where severe shortages were recorded last winter, more rain and snow during 1948 materially improved the supply. Prospects in California also have been improved by the

great expansion program of the Pacific Gas & Electric Company. This year that program calls for expenditures averaging $12½ million a month. Throughout the nation all private utilities are engaged in extensive expansion plans, the aggregate totaling in the neighborhood of $2 billion dollars both last year and this.

In the Pacific Northwest the power situation remains critical, despite the great potential water power resources of the region. This is due in large measure to uncertainty over the government's future power program.

Power shortages in New England, New York and Ontario have increased demands for an early start on the development of the power resources of the international section of the St. Lawrence River.

St. Lawrence Power and Navigation

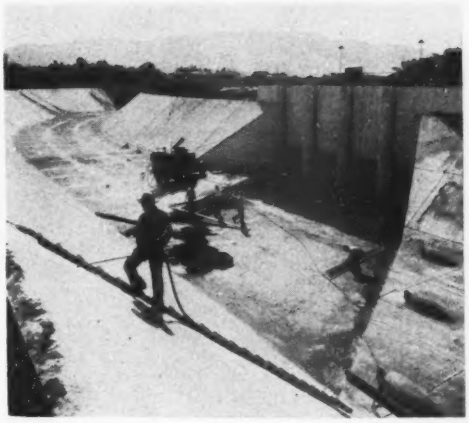
AS A RESULT of the increasing scarcity of power in regions that would benefit by development of more power on the St. Lawrence River, much of the opposition to public development of the International Rapids has disappeared. As a preliminary to such development, the New York State Power Authority and the Hydro Electric Power Commission of Ontario made application to the International Joint Commission for authority to proceed with the development work. However, as President Truman and other advocates of the St. Lawrence Seaway want action on both the enlarged ship canal and power development at the same time, the State Department is understood to have shelved the New York State application.

Opposition to modernization of the ship canal from Lake Ontario down to tidewater at Montreal also has diminished, due in large measure to the possibility of using that canal to bring iron ore from Labrador up into the Great Lakes to supplement the diminishing supplies of the Mesabi Range. In recent months some of the large iron and steel companies have come out in favor of the seaway.

As yet the new administration in Washington has not taken any definite step toward a start on the combined undertakings. Present indications are that when that step is taken it will be another attempt to get Congress to accept the agreement that was negotiated in 1941, but failed then to get approval. That agreement has acquired a certain amount of sacredness for some people because it was negotiated by the late President Roosevelt. Nevertheless, it never was a very satisfactory document, having some serious omissions, and now is badly out of date.

Reclamation Plans and Policies

NO DRASTIC CHANGES in reclamation policies are expected this year. The current appropriations request is a good indication of that. No money is asked for new projects. Some of the existing projects have been under way since 1938, and have yet to deliver significant



IRRIGATION WORKS. Throughout the West the Bureau of Reclamation continued to bring more water to thirsty lands. This is an inlet transition on the Friant-Kern canal in California's Central Valley project.

quantities of water. That's reason enough to concentrate on the going jobs.

There are, however, some straws in the wind that may mean future changes. For example, the proposed Columbia Valley Authority, if Congress should authorize it, would presumably take over all federal reclamation activities in the far Northwest. Irrigation development, vital to the Northwest, has been a useful USBR function there. But the main reason behind the move to create such an authority is the desire by some to concentrate construction and operation of federal electric power works in one agency instead of having these functions spread among three. In contrast, there is some talk in California of an effort to get the operation of the Central Valley project under state jurisdiction. The state engineer's office developed the plan originally, but state officials couldn't arrange financing and the federal government stepped in. The Missouri Valley reclamation work, it seems certain, will continue to be master-minded by the Inter-Agency Committee.

Major Reclamation Works

CONSTRUCTION ACTIVITY on the part of the Bureau of Reclamation during 1948 again broke all records, and the outlook is for even greater activity. Although many projects are under way, more than 80 percent of current reclamation expenditures are centered in six big jobs, namely: California's Central Valley project, Washington's Columbia Basin project, the Colorado-Big Thompson project, the Missouri Basin projects, Hungry Horse Dam, and Davis Dam. Almost $200 million (not including possible deficiency appropriations) is available for these jobs during fiscal year 1949, and more than $300 million is proposed for fiscal year 1950. At his rate of expenditure, tremen-

FLOOD CONTROL ONLY. Between the steep rock banks of the north-flowing Genesee River 40 mi. south of Rochester, N. Y., the Army Engineers are building Mt. Morris Dam, a concrete gravity type 1,000 ft. long with spillway crest 165 ft. high.

dous quantities of new irrigation water will be available in increasing amounts, rising toward a peak in 1952.

The Central Valley project will stabilize the water supply for more than 1,000,000 acres. Colorado-Big Thompson will provide supplemental water for 615,000 acres, Columbia Basin will irrigate more than 1,000,000 acres of new land and the Missouri Basin will add another 750,000 acres in the next six years. That adds up to more than 3,000,000 acres to be made more productive in the near future with possible far-reaching effects on our national economy. Each of the large projects also includes power generation facilities, whose effect will be equally significant.

Work on California's Central Valley project is clouded by controversies regarding (1) the 160-acre limitation and (2) the contracts between the Bureau of Reclamation and the water users. The 160-acre limitation dispute is not likely to be resolved this year unless Congress takes unexpected action. However, an answer may well be found before delivery of significant quantities of water in 1952. The water contract dispute could easily be settled by inserting a clause guaranteeing renewal after the 40-year contract term. It is understood that reclamation officials are favorable to having legislation introduced to this effect.

Biggest Year in Missouri Valley

PEAK ACCOMPLISHMENTS were recorded last year by both the Bureau of Reclamation and the Corps of Engineers in their multi-million-dollar Missouri Valley flood-control programs. By the end of this June, both agencies will have obligated all of the $175,000,000 allotted them for this program under the Flood Control Act of 1944. Each is in a position to increase the tempo of its construction in the Missouri River Basin, if Congress authorizes sufficient appropriations in line with those requested by President Truman in his budget message last January.

Both the physical volume of work completed and the dollar volume of contracts awarded last year for flood-control and river development in the Missouri River Basin are impressive. The Bureau of Reclamation awarded contracts totaling $33,230,000 last year and, during the first eleven months of 1948, completed $68,000,000 of construction. Contracts for an additional $88,000,000 of work are expected to be let during the first half of this year. Ten major projects in the basin had percentages of completion last Jan. 1, ranging from 43 to 100 percent. Work will get under way on eight other important Bureau of Reclamation projects by June 30.

During 1948, over 35,000,000 cu. yd. of excavation was moved by contractors on Corps of Engineers projects in the Missouri River Basin. Contracts totaling $108,000,000 were in force last Dec. 1 and, one month later, the bulk of the $91,000,000 appropriated for Corps of Engineers projects in the basin, had been obligated. Some of the larger dams—notably Garrison, Fort Randall, Harlan County and the Cherry Creek Dam, Denver—were in their third year of construction.

With the large number of big dams and river development projects currently under way, together with those ready to be started, 1949 promises to be an even bigger construction year in the Missouri River Basin.

Flood-Control Progress

ALTHOUGH the flood-control dams of the Missouri River basin have received most attention because of their size, good progress is being made by the Army Engineers in other river basins, especially in the Ohio River valley where a number of large reservoirs on tributary rivers such as Bluestone, Dillon, Delaware and Conemaugh are or soon will be available to hold back flood waters. Much the same can be said about the Arkansas and White rivers, major contributors to floods in the lower Mississippi valley. Among there are Ft. Gibson and Bull Shoals reservoirs. However, a large amount of similar work remains to be done on these and other rivers before reasonable protection against all but major floods will be provided. Also, as some areas cannot be protected by reservoir storage alone, many miles of floodwalls or levees are required. That work also is making steady progress.

Water Rights Compacts

SOME PROGRESS and much history was made during the past year on three important water rights compacts involving the Arkansas, the Upper Colorado, and the Lower Colorado rivers.

For 70 years water of the Arkansas River has irrigated lands in Colorado and Kansas, and during much of that time there have been questions, disputes and litigation between claimants. A real milestone of progress was passed late in 1948 when after long preliminaries, via U. S. Supreme Court decision and Congressional action, an interstate compact was signed. The agreement makes provision for joint-interest conservation on the Arkansas River with interstate allocations under jurisdiction of a Compact Administration.

Unfortunately, this degree of accomplishment cannot be recorded for the Colorado River, where agreement between the interested states is of much greater significance from a national viewpoint. During 1948 the five states of the upper basin did reach agreement on a compact for allocation of the available water and, so far, the legislatures of four states have ratified the compact. But, in contrast, no progress was made toward agreement among the states of the lower basin. The two states most deeply concerned, Arizona and California, appear to be farther apart than ever, due chiefly to the introduction in Congress last year of two bills having an important bearing on the controversy. One, sponsored in California, seeks to have the U. S. Supreme Court adjudicate the controversy over the terms of the Colorado River Compact, and the other would authorize large federal expenditures on a scheme for pumping 1,200,000 acre-ft. of Colorado River water annually into central Arizona to supplement existing irrigation supplies there.

ALATOONA DAM, federal project on the Alabama-Coosa river in Georgia, will protect the city of Rome from floods and develop 72,000 kw. of electric power.

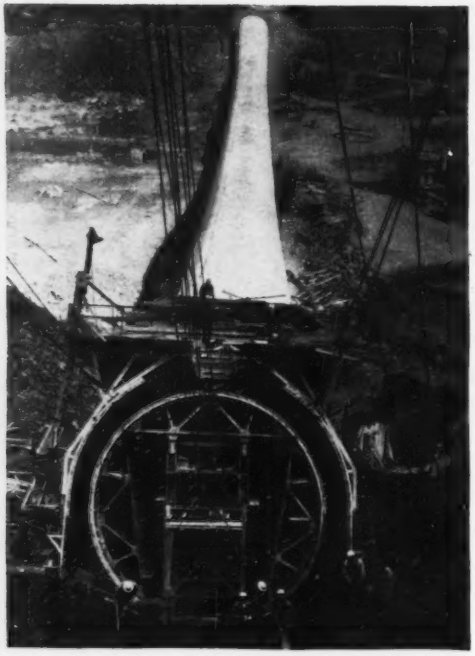
Professional Problems

PROFESSIONAL PROBLEMS in 1948 were largely financial. Increases in the operating costs of the professional societies were not offset in increases in membership, making curtailment of activities or higher dues necessary. When a second attempt to raise the dues of members of the American Society of Civil Engineers failed the society closed its Los Angeles and Chicago offices and cut the operating cost of its Washington office.

Engineering work, both public and private, continued at a high rate throughout the year. As a result, employment conditions were good. In highway work there was a serious deficiency of engineers, due in large measure to the lower rates of pay in comparison to private industry.

No serious labor troubles arose. A strike among Ebasco engineering employees at New York, which began in the latter part of 1947, petered out early in 1948, and the union is no longer recognized there. In the west, the National Professional Association of Engineers, Architects and Scientists completed its organizational work. It is made up of five independent collective-bargaining groups, some of which were started initially under ASCE auspices.

As this year opened both the National Society of Professional Engineers and the Engineers Joint Council



CONSTRUCTION INGENUITY. Interior and exterior form travelers for this siphon on the Columbia Basin project are drawn to new positions up the slope by wire-rope tackle.

were taking steps to see what could be done toward retaining for engineering employees the independent status granted them under the Taft-Hartley Act when Congress comes to repeal or amend that measure.

Advances in Construction Techniques

INVENTIVE THOUGHT of contractors, engineers and manufacturers brought to the construction field a normal crop of new ideas during 1948. Most were of indisputable value; others were controversial or primarily speculative.

One proposition that no longer remained speculative was construction in the open sea. Contractors built a pile-supported 206 x 110-ft. oil drilling platform, complete with shop and housing facilities, in 48 ft. of water eight miles off the Louisiana coast.

And dreams of a continuous-tunneling machine received new support with the development of two machines that chew on coal seams, without pause for mucking. In the meantime, however, the tunneling fraternity was content with more refinements of traditional methods. Both drilling and mucking benefitted. One manufacturer cadmium-plated the friction parts on drills, to reduce lubrication and eliminate rust. The detachable drill bit, itself a comparatively recent development, was in the middle of a controversy that arose with the introduction of carbide-insert bits and of throw-away bits. Cost-saving was argued in favor of both innovations, but the question is not yet resolved. Mucking versatility was broadened by an oxygen-admixing device that changed carbon monoxide to carbon dioxide, so that shovels and trucks powered by internal combustion engines could work underground. In open blasting, millisecond delayed-action caps enabled contractors to cut rock with better fragmentation and less shock.

Elsewhere above ground, the stud-welding gun found many new uses. A notable application took place on the huge all-welded crib of Cleveland's Nottingham water intake, where 20,000 metal lath studs were shot on steel-plate surfaces to be gunited. For this same job, single sections of reinforced concrete pipe were poured in a vertical position to a height of 24 ft., a feat that was duplicated in Los Angeles. That city's Hyperion sewer job also included the year's most spectacular conduit-casting technique—building 455-ton outfall sections 100 ft. long. Thirty-two of these were poured in a horizontal position on shipways, side-launched and floated to position for sinking. In Canada, 84-in. dia. pipe, fully prestressed and without steel diaphragms, was manufactured for a new Montreal water intake. For Davis dam concrete, engineers sought to avoid deleterious effects of alkali aggregates by admixing pozzolanic materials. Ice cooled this concrete, as it cooled the concrete of a few other new dams in warm climates. At Bull Shoals dam aggregates were chilled in icy water before they were mixed, and an unconventional cofferdam, of concrete, was built to withstand overtopping by floods.

In another department, earth, developments followed a pattern established in recent years by the science of soil mechanics. For compaction of granular materials one manufacturer introduced a 30-ton vibrating roller. Vertical sand drains, developed earlier for hastening consolidation of unstable soils, were specified on several new jobs. And earthmoving contractors who had planned to dig and carry 14,000,000 cu.yd. of sand dunes on a California project had their eyes opened by the method of the winning bidder. He sluiced down the dunes and pumped to the spoil area—a badly eroded beach that needed rebuilding.

Another ingenious earthwork method—auger-boring for structural footings—enabled a California contractor to bid 25 percent under his competitors on a New Jersey building foundation job. The price included a transcontinental round trip for rig and crew. Also, on a Texas expressway project the contractor bored 30-in. holes 40 ft. deep, then belled them out to 7½ ft. for overpass concrete column footings. This equipment, usually truck-mounted, can bore holes up to 72 in. dia.

All these examples of initiative and ingenuity are indicative of the revival of "Normal" times in construction. It is a good omen for 1949.

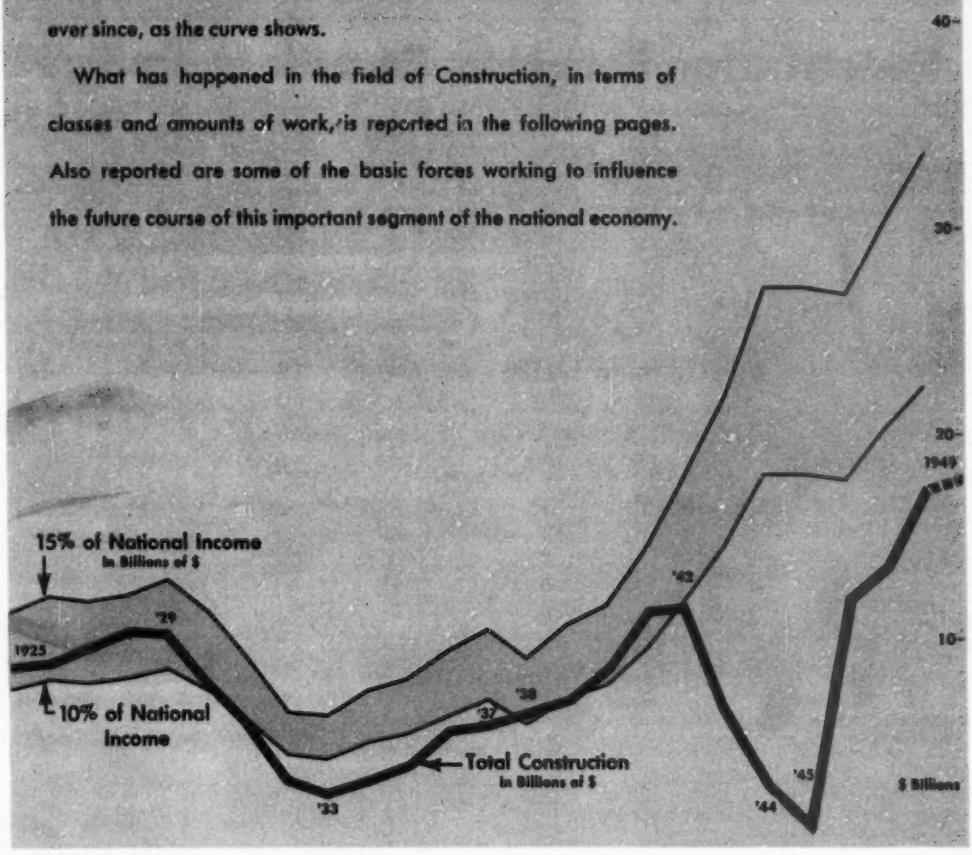
CONSTRUCTION

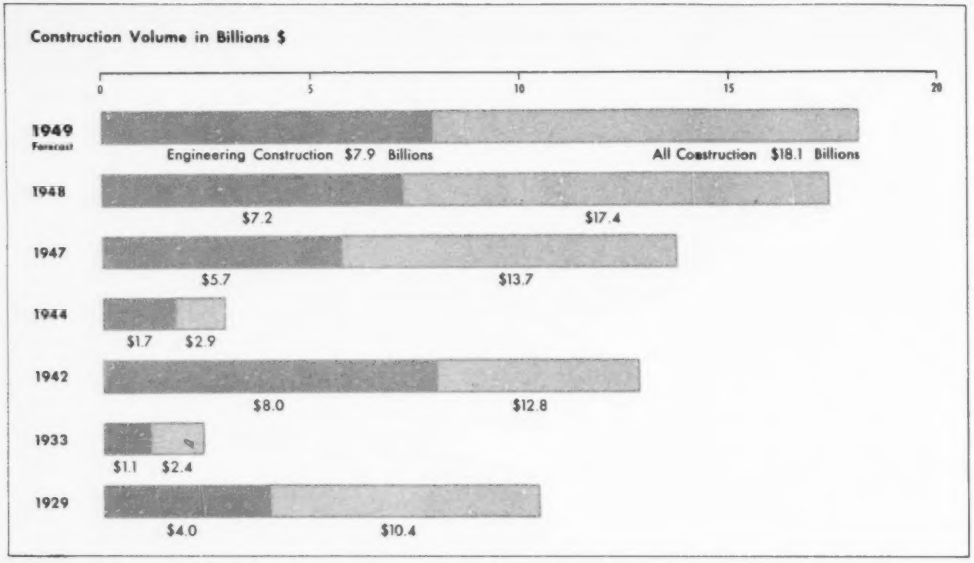
FACTS AND FIGURES

★

Construction's share of the national income is again rising toward the 10 percent figure that, historically, has been associated with a prosperous peacetime economy. Dislocated during the war this relationship dropped to 3 percent in 1944. It has climbed steadily ever since, as the curve shows.

What has happened in the field of Construction, in terms of classes and amounts of work, is reported in the following pages. Also reported are some of the basic forces working to influence the future course of this important segment of the national economy.





Construction Sets New Records in Dollars

Construction of all kinds pushed over the $17 billion mark in 1948 and is heading for an estimated $18 billions in 1949. Engineering construction projects reported by ENGINEERING NEWS-RECORD topped $7.2 billions in volume of new work started, are heading for $7.9 billions, a 10 percent increase. The previous record was $8 billions in 1942.

That there is ample work proposed to support a substantial increase in construction this year is evident from the size of ENR's measured backlog of construction which stood at $43.2 billions at the close of 1948. This backlog of proposed projects would support six years of heavy construction at the 1948 volume rate.

Engineering construction was 25 percent higher in 1948 than in 1947, 55 percent higher in New England, 27 percent in Middle Atlantic, 8 in the South, 11 in Mid-West, 38 in West of Mississippi states, 27 percent in the Far West.

Housing starts, totaling 926,800, topped 1947 but fell off sharply in the fourth quarter. Commercial building, including private mass housing, was the only loser in 1948, dropping 2 percent. Industrial building, including public utilities, increased 25 percent, public buildings 85 percent, waterways and reclamation 56 percent, bridges 51, waterworks 47, sewerage 28, highways 23 and unclassified 23 percent.

New capital to finance construction increased 73 percent.

The facts and figures behind these highlights are reported graphically in the following pages.

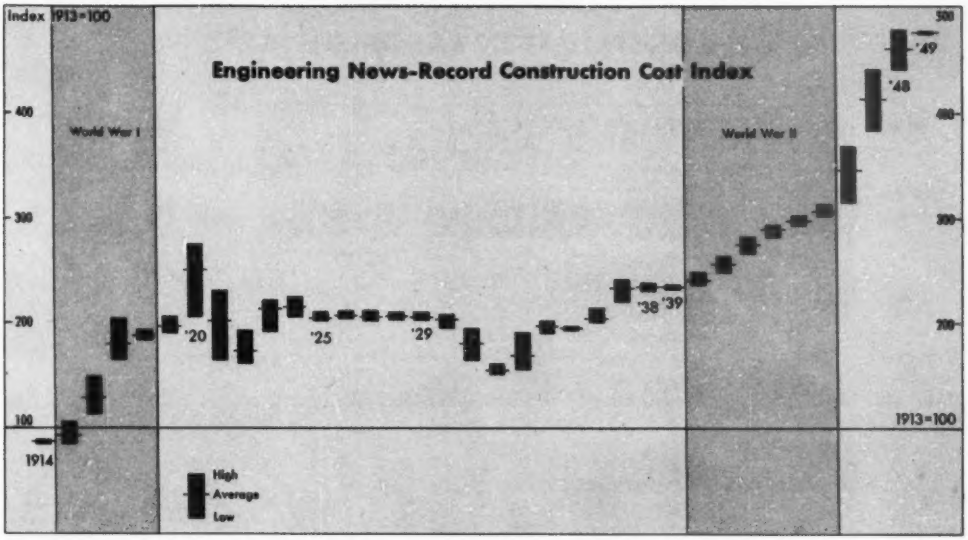
Table I. Construction Volume Analysed

	All Construction Estimated by Engineering News-Record			Engineering Construction		
	Public	Private	Total	As reported by ENR	In 1939 $	ENR Volume Index 1913–100
1949 Forecast	$5,900,000,000	$12,170,000,000	$18,070,000,000	$7,914,000,000	$3,900,000,000	275
1948	5,253,000,000	12,126,000,000	17,379,000,000	7,219,000,000	3,682,000,000	254
1947	3,643,000,000	10,034,000,000	13,677,000,000	5,659,000,000	3,318,000,000	228
1944 War Low	1,815,000,000	1,085,000,000	2,900,000,000	1,730,000,000	1,363,000,000	96
1942 War High	11,061,000,000	1,760,000,000	12,821,000,000	8,006,000,000	6,826,000,000	480
1939	3,750,000,000	3,224,000,000	6,974,000,000	3,003,000,000	3,003,000,000	211
1933 Dep. Low	1,533,000,000	907,000,000	2,440,000,000	1,068,000,000	1,480,000,000	102
1929*	3,263,000,000	7,114,000,000	10,377,000,000	3,950,000,000	4,500,000,000	317

*High for recorded engineering construction; 1928 was $203,000,000 higher for estimated total

Table II. Construction Volume Forecasts for 1949 Compared

Forecaster	Basis	1948	1949	% Rise
Engineering News-Record	estimated total contracts awarded and work started by day labor	$17,379,000,000	$18,070,000,000	4
Engineering News-Record	recorded engineering construction contracts and work started	7,219,000,000	7,914,000,000	10
Dept. of Commerce & Bureau of Labor Statistics	joint estimate of total construction put in place	17,775,000,000	18,750,000,000	5
Producers Council	estimated total construction put in place	18,000,000,000	18,175,000,000	1
F. W. Dodge (37 Eastern States)	estimated 37-state total contracts	9,655,000,000	9,430,000,000	−2



High Costs—Construction's Biggest Problem

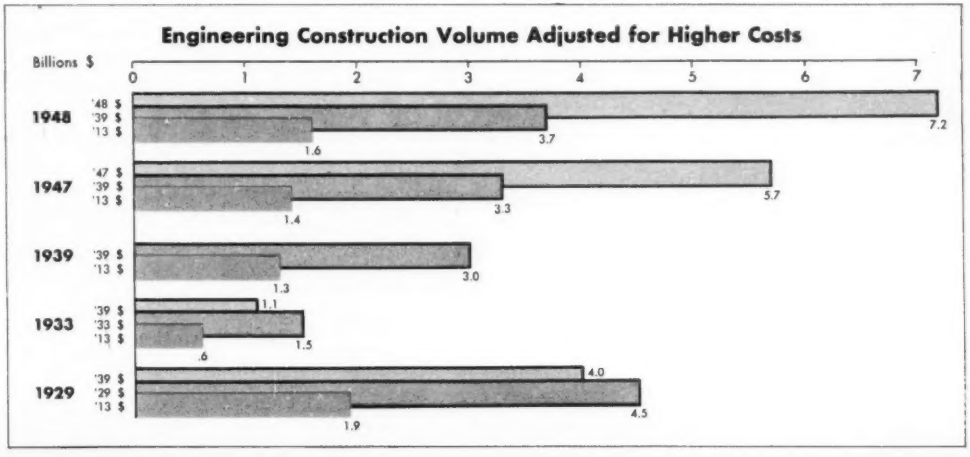
Construction accomplishments, in the dollars just reported, are somewhat deflated when measured in prewar construction dollars. Thus 1948 dollar volume is 60 percent higher than 1929. But in 1939 construction-dollars, 1948 volume is 18 percent below 1929.

Costs of construction materials and labor in 1948, climbed to double their 1939 rates, so dollars spent bought only half as much construction as their prewar ancestors. In November, however, costs started down, gently, for the first sustained lowering and leveling movement since 1938-39. Lumber, which (with labor) led the ascent, is now responsible for reversing the trend.

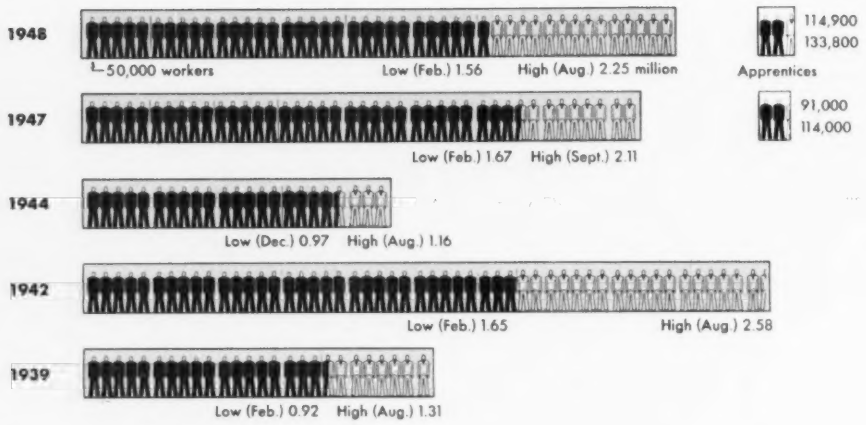
Behind these improvements in the cost picture were improved supplies of materials and equipment, also more experienced workers with resulting improvement in labor and job productivity. The principal shortages remaining were structural steel, pipe and plate, cement (on the borderline), tractors, heavy power shovels and cranes and heavy graders.

Lumber production and plywood caught up with the market, and prices tumbled. This was largely due to the declining number of new starts of housing units in the fourth quarter. Here drastic reduction in prices per housing unit is needed to pick up housing construction volume by building for the mass, or lower income market.

More details, and dollars and cents values, for these many influences on construction activity are reported graphically in the following pages.

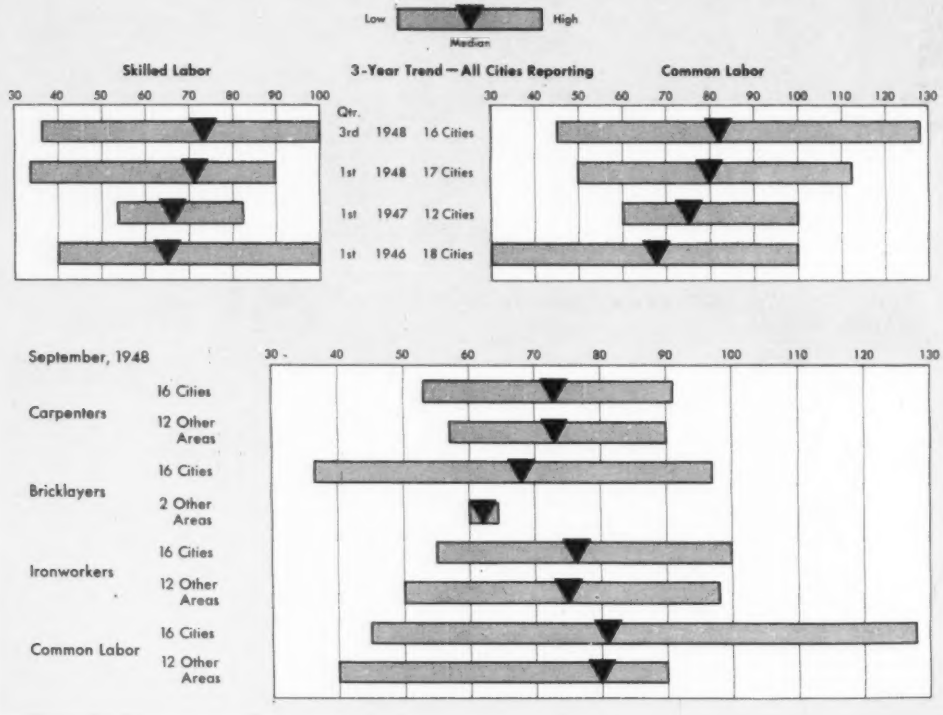


CONSTRUCTION LABOR SUPPLY

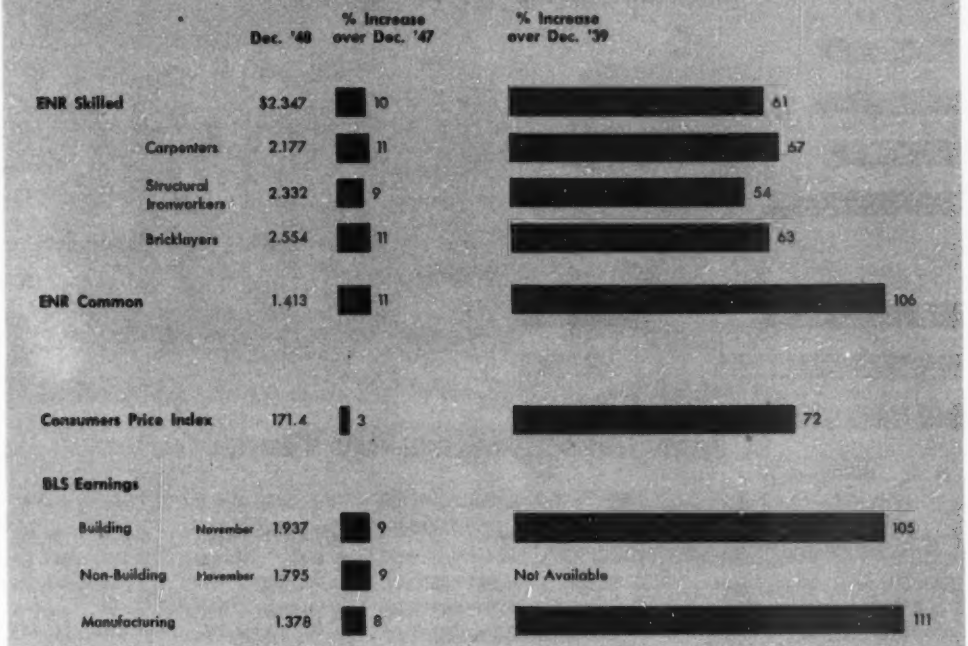


CONSTRUCTION LABOR PRODUCTIVITY ON BUILDINGS

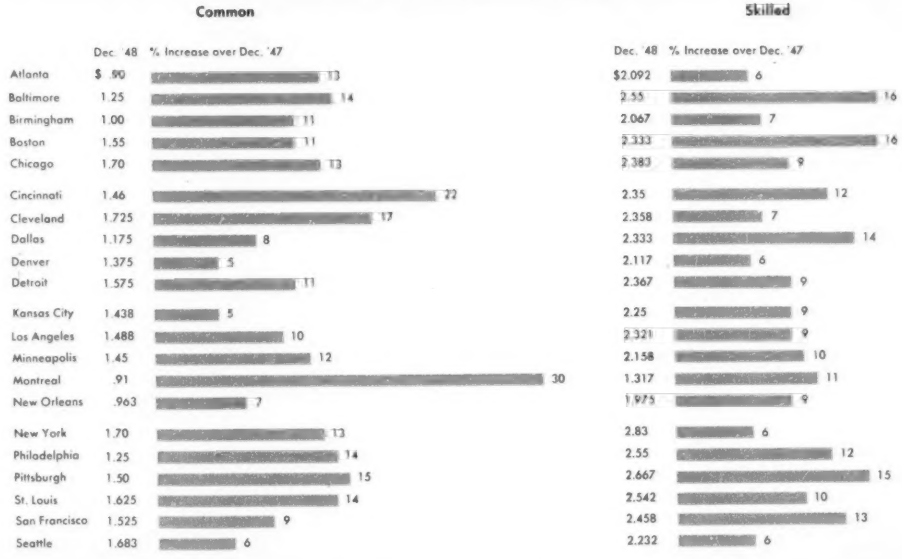
As Reported by Building Contractors to Engineering News-Record 1939 = 100



WAGE RATES ON CONSTRUCTION

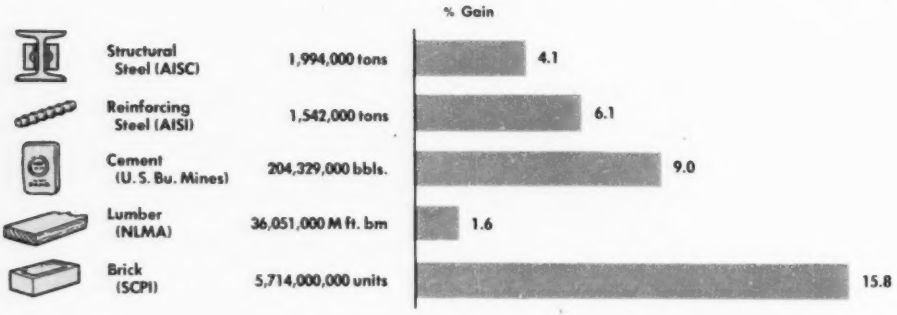


VARIATIONS IN WAGE RATES—By Cities



CONSTRUCTION MATERIALS SUPPLY

Gains in 1948 over 1947 shipments



Material Shipments—By Years

Item	Unit	1929	1933	1939	1942	1945	1947	1948
Lumber	Millions Bd. Ft.	35,952	16,300	25,811	38,946	28,869	35,500	36,051
Cement	Thous. Bbl.	169,868	64,283	122,651	185,267†	106,398†*	187,395§	204,329§
Fabr. Str. Steel	Thous. Tons	3,307	828	1,440	2,040	797‡	1,915	1,994
Reinf. Steel	Thous. Tons	1,079	409	1,214	1,845	835	1,453	1,542
Explosives	Thous. Lbs.	509,708	255,987	372,470	427,744	440,208	634,829	665,524
Brick	Million Brick	.....	860	3,319	2,929	2,375	4,934	5,714

†*Includes Puerto Rico and Hawaii *from May through December. §Includes Puerto Rico. ‡Bridges and buildings only, representing approximately 80% of the industry. A.I.S.C. discontinued estimated shipments data for entire industry during war years.

Production Index for Selected Construction Materials

Unadjusted—1939 Monthly Average=100

U. S. Dept. of Commerce

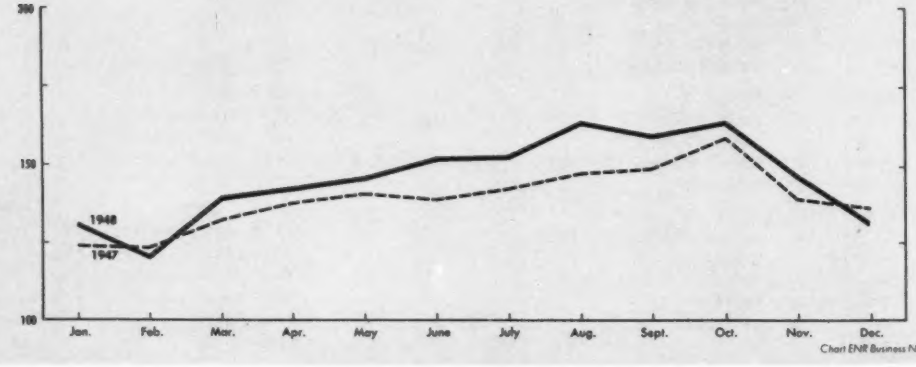
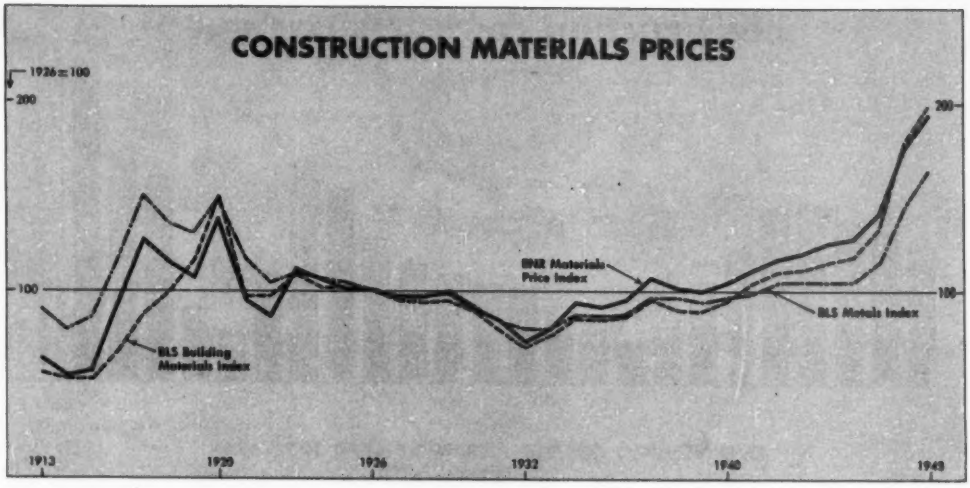
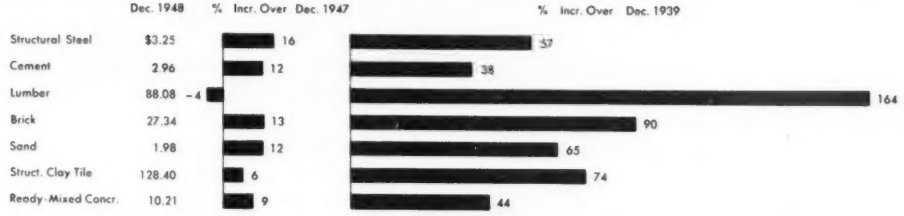


Chart ENR Business News

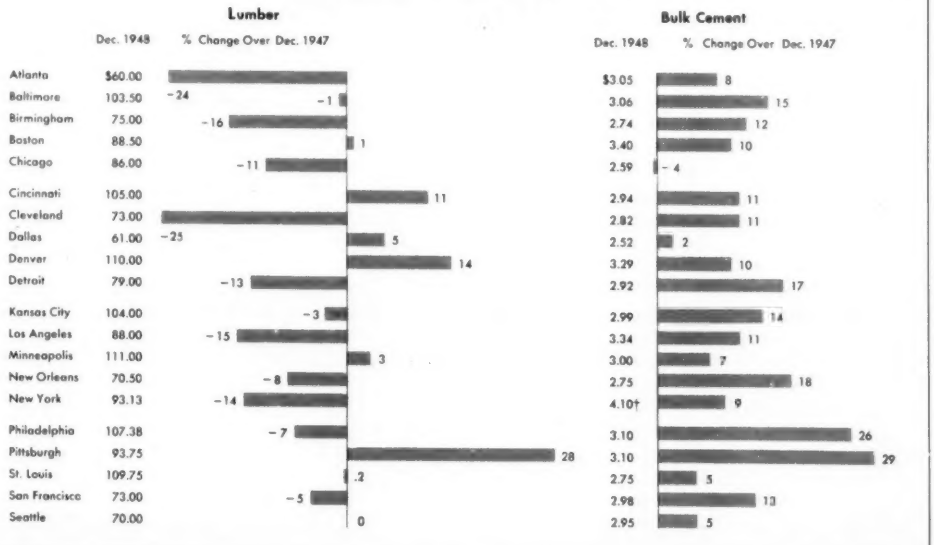
CONSTRUCTION MATERIALS PRICES



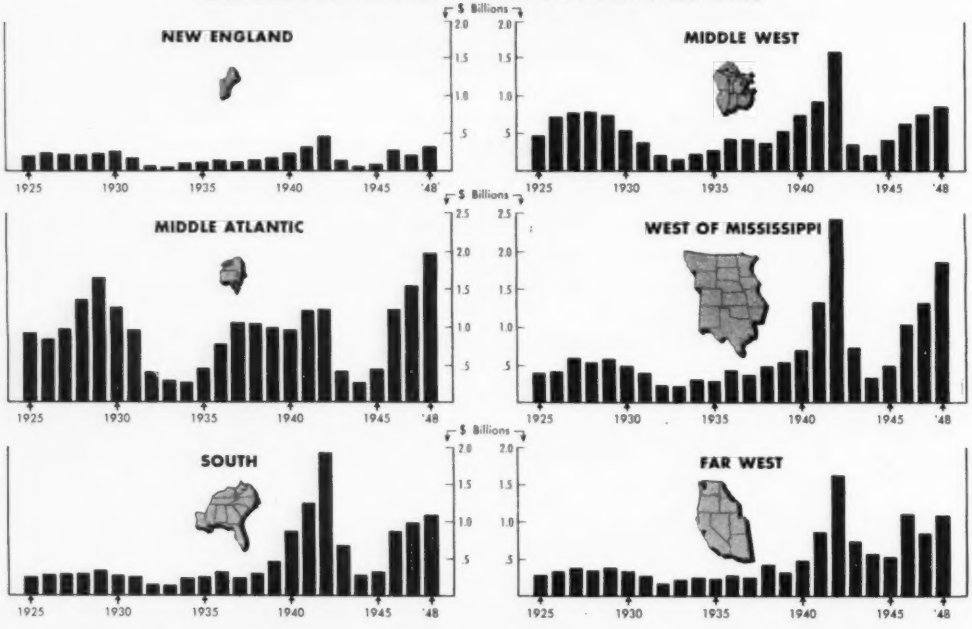
PRICE RANGES—1948


Dec. 1948
% Incr. Over Dec. 1947
% Incr. Over Dec. 1939
Structural Steel $3.25 16 57
Cement 2.96 12 38
Lumber 88.08 -4 164
Brick 27.34 13 90
Sand 1.98 12 65
Struct. Clay Tile 128.40 6 74
Ready-Mixed Concr. 10.21 9 44

VARIATIONS IN PRICE —By Cities



ENGINEERING CONTSRUCTION BY AREA 1925-1948



WHERE EACH YEAR'S ENGINEERING CONSTRUCTION DOLLAR WAS SPENT

	New England	Mid Atlantic	South	Middle West	West of Miss.	Far West
1948	4¢	28¢	15¢	13¢	26¢	15¢
1939	6¢	33¢	15¢	18¢	18¢	10¢
1929	6¢	43¢	8¢	19¢	15¢	9¢

ENGINEERING CONSTRUCTION CONTRACTS AWARDED IN 1948

AS REPORTED TO ENGINEERING NEWS-RECORD

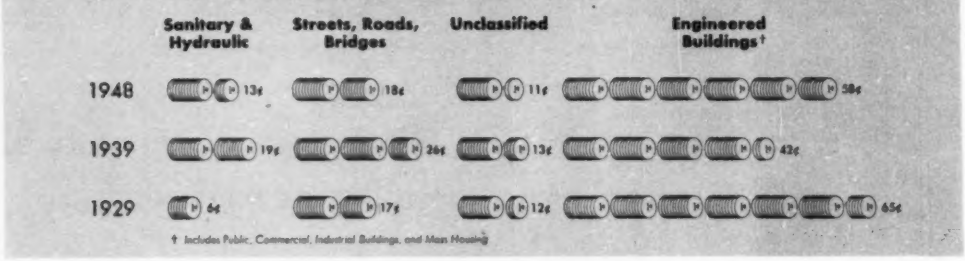
Construction projects of the following costs—waterworks, excavation and irrigation, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

Thousands of Dollars (000 Omitted). Computed on Weekly Averages.

States	Public Works Contracts								Private Contracts			Construction		1948 TOTAL	1947 TOTAL	% Change 1947 to 1948
	Water-works	Sewer-age	Bridges	Earthwork & Drain.	Streets, Roads	Build-ings	Un-classified	Federal Gov't Work	Indus-trial Bldgs.	Com-mercial Bldgs.	Un-classified	Private	Public			
UNITED STATES																
1948	**208,658**	**227,762**	**302,655**	**519,463**	**995,819**	**1,161,262**	**231,467**	**951,229**	**1,095,581**	**1,888,480**	**588,240**	**3,581,444**	**3,637,943**	**7,219,387**		
1947	139,141	174,764	196,297	326,856	794,133	615,492	245,822	656,419	862,205	1,897,961	406,561	3,167,801	2,491,431		5,659,232	
% Change	+47	+28	+51	+56	+23	+85	−6	+42	+25	−2	+42	+11	+43			+ 25
NEW ENGLAND																
1948	**14,624**	**7,182**	**29,393**	**5,884**	**43,387**	**85,022**	**19,264**	**15,707**	**38,470**	**77,334**	**2,338**	**118,142**	**204,756**	**322,898**		
1947	2,119	2,939	11,395	5,739	24,632	20,503	21,692	25,791	42,155	71,358	1,480	114,993	89,019		204,012	
% Change	+573	+139	+153	+1	+73	+307	−13	−40	−10	+6	+57	+1	+126			+ 58
Maine			2,011	1,037	2,649	339		1,112			150	150	6,036	**6,186**	18,981	− 68
New Hampshire	60		1,256	1,224	7,599	9,370		5,042	124			124	19,503	**19,627**	3,926	+386
Vermont			94		2,158	2,147	540	499		1,000		1,000	4,943	**5,943**	3,197	+ 84
Massachusetts	13,317	2,363	19,039	773	14,798	32,977	15,207	1,832	7,809	23,542	1,043	32,394	98,474	**130,868**	50,737	+152
Rhode Island	174	1,860	53	791	2,641	5,593	2,340	1,680	2,683	10,345	350	13,578	13,452	**27,030**	27,981	− 5
Connecticut	1,073	2,959	6,946	2,059	13,547	34,596	1,168	5,572	27,854	42,447	595	70,996	62,348	**133,244**	99,220	+ 32
MIDDLE ATLANTIC																
1948	**64,959**	**31,811**	**93,313**	**60,285**	**221,794**	**298,407**	**48,398**	**164,788**	**175,082**	**877,652**	**119,232**	**1,176,691**	**814,162**	**1,990,853**		
1947	32,996	34,805	41,253	25,893	143,819	176,757	48,871	115,384	215,804	797,689	19,068	1,032,594	504,001		1,536,595	
% Change	+93	−10	+122	+128	+51	+66	−3	+40	−20	+8	+515	+12	+59			+ 27
New York	43,556	15,307	30,986	25,426	68,002	154,726	18,965	58,128	21,305	291,990	10,330	420,740	352,695	**773,435**	493,810	+ 54
New Jersey	646	1,425	14,672	2,915	17,003	26,060	2,260	17,519	24,792	82,776	885	109,063	64,371	**173,434**	226,503	− 25
Pennsylvania	8,386	10,827	20,944	29,532	103,581	71,619	17,065	63,034	72,466	338,506	13,388	424,360	261,954	**686,314**	677,979	− 1
Maryland	11,469	3,161	12,573	2,065	27,221	22,905	9,103	10,309	24,003	125,570	744	150,317	88,497	**238,814**	66,306	+253
Dist. of Columbia	902	1,091	2,874	94	1,431	15,104	1,165	7,944	510	6,167		6,677	22,721	**29,398**	32,271	− 10
Delaware			11,262	173	4,556	7,933		7,774	32,006	32,643	885	65,534	23,924	**89,458**	39,726	+121
SOUTH																
1948	**29,182**	**34,249**	**57,585**	**86,308**	**195,589**	**185,143**	**37,402**	**149,175**	**165,655**	**285,397**	**84,176**	**458,255**	**622,431**	**1,080,686**		
1947	18,122	20,599	44,405	83,339	185,989	99,096	47,049	145,598	107,116	304,584	68,283	490,056	498,526		978,582	
% Change	+58	+63	+27	+2	+3	+83	−22	+1	+32	−34	+21	−6	+22			+ 8
Virginia	1,989	1,323	3,862	24,219	11,598	16,727	6,255	33,703	4,574	16,612	1,186	22,372	65,973	**88,345**	74,058	+ 17
West Virginia	87		1,714	7,341	7,004	12,215	1,276	18,090	2,242	2,865	7,700	12,807	29,637	**42,444**	34,171	+ 22
North Carolina	6,005	3,743	3,698	723	23,333	11,845	1,338	1,415	11,988	10,216	2,928	25,133	50,685	**75,818**	80,795	− 6
South Carolina	1,140	2,138	3,394	2,308	16,944	4,171	1,448	3,069	28,411	12,264	3,103	43,778	31,513	**75,291**	64,252	+ 18
Georgia	3,296	1,881	6,014	3,004	28,404	9,539	4,911	4,367	17,673	36,376	8,401	62,450	57,049	**119,499**	124,286	− 6
Florida	6,967	4,835	7,382	4,689	10,088	23,853	4,139	8,371	17,577	57,735	11,562	86,874	61,933	**148,807**	178,097	− 18
Alabama	1,479	5,048	2,504	580	9,645	10,827	5,112	1,652	55,552	11,738	4,993	72,333	35,145	**107,478**	63,144	+ 66
Mississippi	1,492	1,267	1,239	4,180	14,956	11,892	1,854	6,821	2,151	2,393	7,575	12,119	36,880	**48,999**	57,796	− 17
Louisiana	1,883	9,255	12,689	28,469	20,312	27,793	7,015	29,403	16,182	28,685	11,181	50,188	102,276	**152,464**	134,204	+ 11
Kentucky	1,620	4,043	10,340	6,942	16,911	13,070	4,865	16,116	7,534	8,577	8,931	27,779	54,674	**82,453**	83,572	− 3
Tennessee	3,254	716	4,749	3,853	36,394	43,211	4,489	26,168	7,770	17,936	16,716	42,422	96,666	**139,088**	84,207	+ 62
MIDDLE WEST																
1948	**24,610**	**38,938**	**33,816**	**15,376**	**155,316**	**151,112**	**21,698**	**48,251**	**227,622**	**123,556**	**67,505**	**418,983**	**440,566**	**859,549**		
1947	22,361	57,095	27,920	33,947	133,993	82,980	28,233	50,477	142,213	150,201	79,708	372,640	385,991		758,631	
% Change	+8	−33	+19	−56	+14	+79	−25	−6	+57	−17	−10	+12	+14			+ 11
Ohio	11,057	2,245	4,988	4,118	45,001	28,004	7,284	9,621	92,146	57,315	41,745	191,206	102,797	**294,003**	179,696	+ 61
Indiana	1,712	2,166	6,282	1,220	18,715	28,228	2,179	7,991	20,298	14,911	3,643	38,852	60,562	**99,414**	85,630	+ 14
Illinois	4,969	16,513	9,615	9,563	39,528	41,804	9,412	13,742	71,623	37,852	5,865	115,440	131,104	**246,544**	279,389	− 13
Wisconsin	1,879	8,492	5,324	125	28,828	26,612	2,472	293	30,681	11,928	14,428	57,037	74,722	**131,759**	119,145	+ 9
Michigan	4,993	9,532	7,607	350	22,194	26,454	281	16,604	12,874	1,756	1,824	16,448	71,381	**87,829**	94,771	− 9
WEST OF MISSISSIPPI																
1948	**48,716**	**48,674**	**44,156**	**234,564**	**265,272**	**258,262**	**51,800**	**359,715**	**243,129**	**385,717**	**293,460**	**923,397**	**950,353**	**1,873,750**		
1947	27,478	34,923	44,457	134,020	217,433	123,036	44,312	210,411	249,519	255,595	204,551	710,045	625,269		1,335,314	
% Change	+74	+37	−3	+72	+20	+106	+15	+68	−4	+48	+41	+28	+49			+ 38
Minnesota	1,147	4,192	2,595	1,818	19,916	13,352	2,059	2,454	12,161	13,428	5,829	31,517	44,980	**76,497**	69,641	+ 8
Iowa	2,569	2,424	7,118	4,938	21,724	14,666	2,675	5,229	11,518	13,479	4,115	29,112	56,114	**85,226**	56,169	+ 49
Missouri	2,372	2,976	6,585	12,080	15,644	22,978	3,092	23,076	15,648	31,361	16,970	64,118	65,588	**129,706**	138,593	− 8
Arkansas	855	249	2,170	17,479	1,750	14,360	2,087	28,471	7,274	1,050	5,985	14,588	38,671	**53,259**	97,265	− 46
North Dakota	1,346	1,034	579	19,084	13,281	4,223	983	23,000	4,163		1,101	4,567	8,829	**40,331**	**39,360**	33,482	+ 45
South Dakota	350	1,244	850	10,985	12,945	5,593	1,762	17,757	492	1,010	3,528	5,030	33,799	**38,829**	24,072	+ 39
Nebraska	1,150	1,194	188	20,680	13,566	20,019	4,472	42,927	5,648	7,623	6,799	20,070	71,269	**91,339**	38,102	+135
Kansas	1,944	2,442	2,553	8,342	22,653	6,477	3,447	10,483	8,937	17,432	12,110	38,479	47,858	**86,337**	79,556	+ 6
Oklahoma	13,564	6,905	3,732	8,008	19,695	15,636	1,491	11,218	16,661	11,377	19,700	47,738	69,031	**116,769**	75,672	+ 51
Texas	17,004	22,354	11,597	47,341	76,799	78,661	22,239	61,770	146,776	278,050	202,103	621,004	275,980	**896,984**	552,424	+ 59
Montana	431	2,283	3,320	61,122	11,563	13,825	815	73,247	295	4,277	2,015	6,587	93,059	**100,046**	42,682	+130
Wyoming	710	322	751	4,397	10,342	7,153	1,010	8,992		1,101	5,414	6,515	24,985	**31,200**	38,909	− 21
Colorado	3,090	400	1,986	6,993	14,254	12,446	3,653	19,056	18,208	4,308	2,300	24,816	43,412	**68,228**	57,650	+ 16
New Mexico	1,534	555	92	1,297	11,040	28,873	1,985	31,036	1,348	1,221	2,625	4,594	45,376	**49,970**	31,697	+ 58
FAR WEST																
1948	**26,567**	**66,908**	**44,392**	**117,126**	**114,461**	**183,316**	**52,905**	**213,673**	**245,623**	**218,824**	**21,529**	**485,976**	**605,675**	**1,091,651**		
1947	36,065	24,703	26,867	43,918	88,267	113,140	55,665	108,758	105,398	318,544	33,531	457,473	388,625		846,098	
% Change	−28	+186	+62	+162	+27	+59	−7	+93	+129	−33	−37	+4	+53			+ 27
Idaho	351	1,394	627	4,937	8,432	3,303	294	9,118	13,370	4,083	507	17,990	19,508	**37,468**	30,442	+ 21
Utah	740	566	225	4,556	5,474	7,211	2,924	6,860	26,308	4,850	337	31,695	21,696	**53,391**	29,868	+ 78
Arizona	72	500	1,823	3,115	6,146	1,968	9,097	13,855	8,300	945	100	9,345	22,661	**32,006**	12,299	+155
Nevada	511	150	1,118	2,372	4,455	2,401	2,405	6,864	125	1,600		1,725	13,412	**15,137**	12,986	+ 14
Washington	2,440	6,370	17,656	33,049	15,291	68,478	9,101	70,024	12,635	31,997	3,950	48,582	152,170	**200,752**	146,023	+ 35
Oregon	2,149	3,519	4,027	32,572	13,574	28,494	4,397	57,939	8,474	14,822	2,057	25,353	88,947	**114,300**	70,259	+ 60
California	20,504	54,239	18,916	36,525	61,089	71,521	24,687	49,065	176,411	160,527	14,398	351,336	287,281	**638,617**	544,681	+ 18
CANADA																
1948	**8,379**	**10,948**	**6,521**	**10,517**	**35,678**	**139,784**	**42,021**		**166,158**	**91,539**	**68,805**	**266,552**	**253,798**	**520,350**		
1947	8,628	6,330	7,231	24,653	39,072	86,505	28,466		126,438	70,827	48,419	254,634	201,045		446,679	
% Change	−5	+70	−12	−58	−10	+58	+45		−18	+27	+39	+5	+24			+ 14

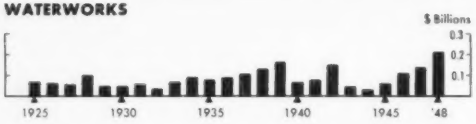
ENGINEERING CONSTRUCTION VOLUME—BY CLASS OF WORK

HOW EACH YEAR'S ENGINEERING CONSTRUCTION DOLLAR WAS SPENT



† Includes Public, Commercial, Industrial Buildings, and Mass Housing

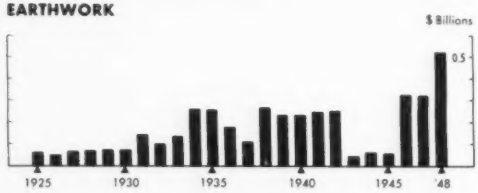
WATERWORKS



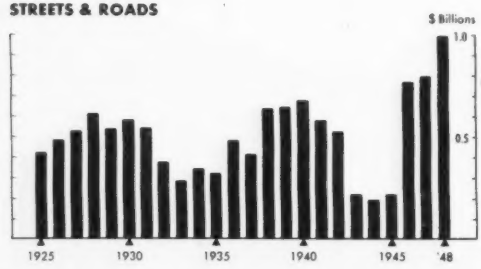
SEWERAGE

BRIDGES

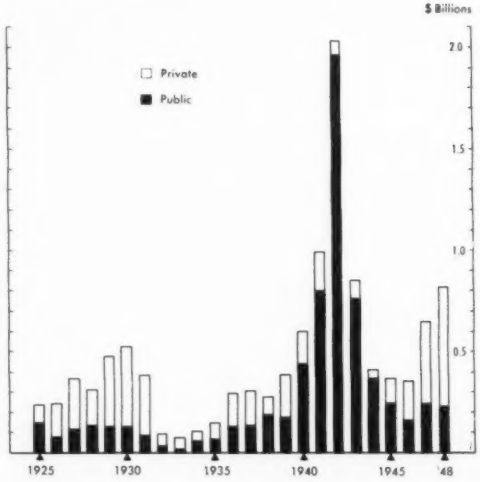
EARTHWORK



STREETS & ROADS



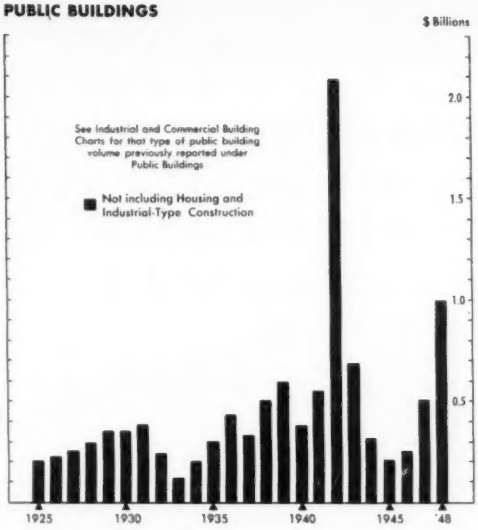
UNCLASSIFIED CONSTRUCTION



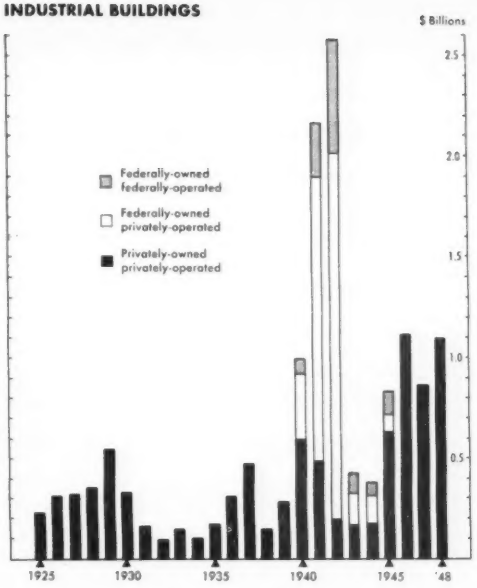
UNCLASSIFIED CONSTRUCTION—PRIVATE & PUBLIC

	1946	1947	1948
Private			
Transportation Lines	$75,128,000	$53,853,000	$119,182,000
Pipe Lines	43,314,000	236,882,000	363,338,000
Railroads	20,356,000	57,053,000	30,155,000
Telephone	10,578,000	9,510,000	2,693,000
Shipyards	75,000		
Radio		6,989,000	4,274,000
Airports	12,806,000	319,000	1,320,000
Other	33,898,000	41,965,000	67,278,000
Total Private	196,155,000	406,561,000	588,240,000
Public—Federal			
Airports, Airbases	9,910,000	36,366,000	5,060,000
Hangars, Buildings	5,013,000	11,872,000	7,125,000
Airport Housing	8,509,000	14,974,000	486,000
Airport Facil. & Util	1,587,000	10,219,000	5,147,000
Shipyards	33,690,000	1,617,000	948,000
Other	25,997,000	29,100,000	51,022,000
Total Federal	84,803,000	104,148,000	69,797,000
Public—State & Municipal			
Airports	24,585,000	47,762,000	75,579,000
Subways, Tunnels	23,733,000	28,210,000	17,621,000
Other	24,836,000	65,702,000	68,470,000
Total State & Mun.	73,154,000	141,674,000	161,670,000
Total Unclassified	**$354,112,000**	**$652,383,000**	**$819,707,000**

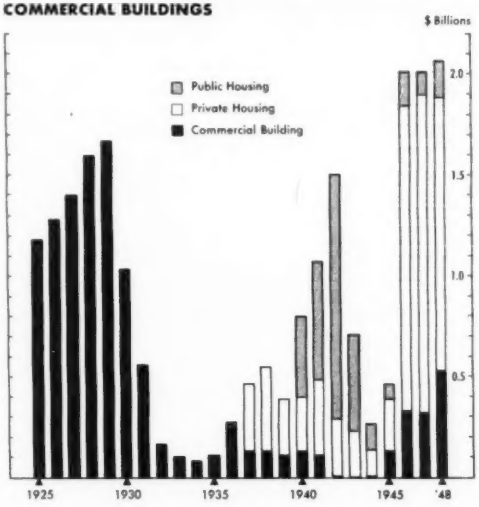
PUBLIC BUILDINGS



INDUSTRIAL BUILDINGS



COMMERCIAL BUILDINGS

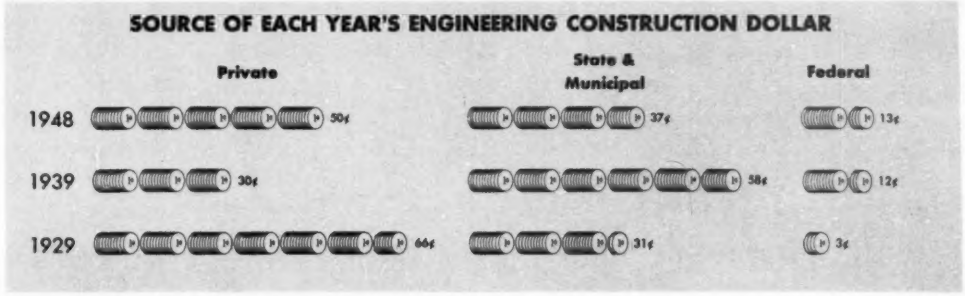


PLANT EXPANSION BY INDUSTRIES

	1946	1947	1948
Transportation Service			
1. Railroads	$17,198,000	$12,402,000	$9,314,000
2. Automotive	33,544,000	26,392,000	47,989,000
Public Utilities	**93,330,000**	**125,307,000**	**249,820,000**
Process Industries (a)	**499,302,000(c)**	**292,544,000(c)**	**401,144,000(c)**
Food Industries (b)	**118,997,000**	**123,152,000**	**75,122,000**
Metal Refining & Rolling	**39,533,000**	**46,215,000**	**61,139,000**
Metal Working Plants			
1. Auto Factories	29,390,000	11,526,000	8,016,000
2. Aircraft Factories	1,698,000	2,297,000	1,525,000
3. Foundries	5,693,000	2,838,000	5,209,000
4. Mach. & Mach. Parts	114,671,000	101,173,000	113,083,000
Radio	**1,845,000**	**1,660,000**	**1,845,000**
Textiles (Excl. rayon)	16,325,000	11,024,000	9,846,000
Wood Industries	**10,391,000**	**8,121,000**	**8,116,000**
Miscellaneous			
1. General Factories	122,647,000	92,317,000	101,102,000
2. Refrigeration & Cold Storage	9,187,000	4,637,000	1,704,000
Total	**$1,113,251,000(c)**	**$862,295,000(c)**	**$1,095,581,000(c)**

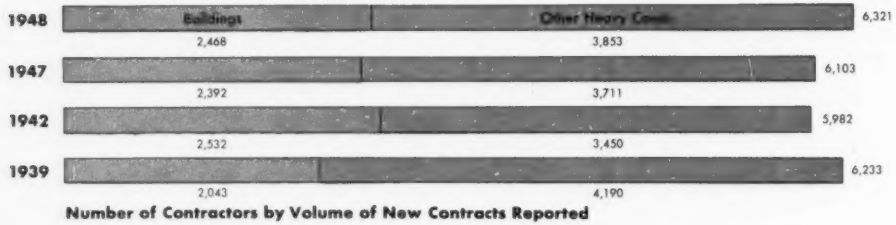
(a)Includes distilleries. (b)Includes breweries and wineries. (c)In addition to these figures, contracts totaling $25,000,000 were awarded for federally-owned plants in 1946, $15,899,000 in 1947, $824,000 in 1948.

SOURCE OF EACH YEAR'S ENGINEERING CONSTRUCTION DOLLAR

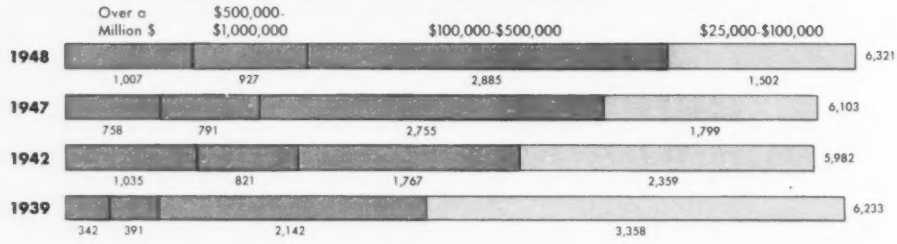


CONTRACTORS FOR ENGINEERING CONSTRUCTION

Number of Contractors Awarded Contracts for



Number of Contractors by Volume of New Contracts Reported



As reported by Engineering News-Record

EQUIPMENT SHIPMENTS, Excavating & Earthmoving

	Millions of $			Aver. per Quarter		
	1946	1947	1948*	1948*	1947	% Gain
Total	282.6	437.2	383.9	127.9	109.3	+16.8
Power Shovels & Cranes	81.4	132.8	117.4	39.1	33.2	+17.7
Road Constr. & Maint.	88.6	99.3	88.9	29.6	24.8	+19.4
Dozers	20.1	20.5	18.9	6.3	5.1	+23.6
Other Tractor Mounted Equip.	y	20.3	14.8	4.9	5.1	− 4.0
Tractor Crawler	81.3	134.4	117.6	39.2	33.6	+16.8
Tractor, Wheel	y	18.5	17.0	5.7	4.6	+24.1
Drills, Well & Blast Hole	11.2	11.4	9.3	3.1	2.8	+10.5
Mixers, Pavers, Other Concrete Equip.	32.6x	y	y			
Other Miscellaneous	13.8x	y	y			

* First 3 quarters
y not reported
x not included in '46 total

Source: Facts for Industry, Bu. of Census

State Highway Programs Top $1.5 Billions for 1949

Construction and maintenance budgets running 1 percent below 1948 expenditures

Twenty state highway departments plan to increase their new construction and maintenance in 1949. Twenty-six states and the District of Columbia are budgeting less construction and maintenance this year. Two states, West Virginia and Illinois have not set their 1949 objectives.

Construction and maintenance totaled $1.582 billion in 1948. This was 5 percent more than the estimated budgets reported in ENGINEERING NEWS-RECORD February 19, 1948, p. 129 which forecast $1.5 billion.

Based on preliminary 1949 estimates reported to ENGINEERING NEWS-RECORD by state highway officials, total highway and bridge expenditure by the states should top $1.5 billions, just 1 percent under their 1948 record.

Action by legislatures meeting in Iowa, Arkansas and West Virginia may close this small gap. Maintenance should run about 1.5 percent higher than in 1948, work handled by state forces, 1 percent more, and maintenance by contract, 6 percent higher. New construction programs average 3 percent below last year. Purchases of new equipment are expected to drop 14 percent. This means that 1949 expenditures for new construction should top $1.1 billions, for maintenance $400 millions, for new equipment, $44 millions.

Total mileage built in 1948 was 40,798, of which 26 percent was hard surface, a 176 percent rise over 1948. All other types and total mileage were lower than in 1947.

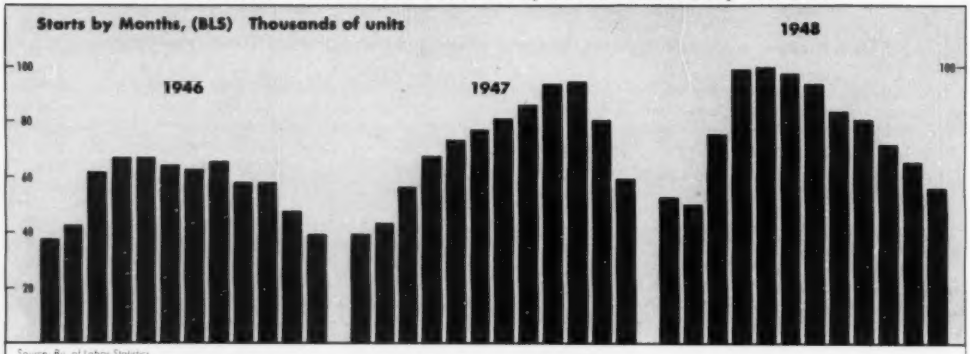
STATE HIGHWAY PROGRAMS—1948-1949

Reported to Engineering News-Record by State Highway Executives

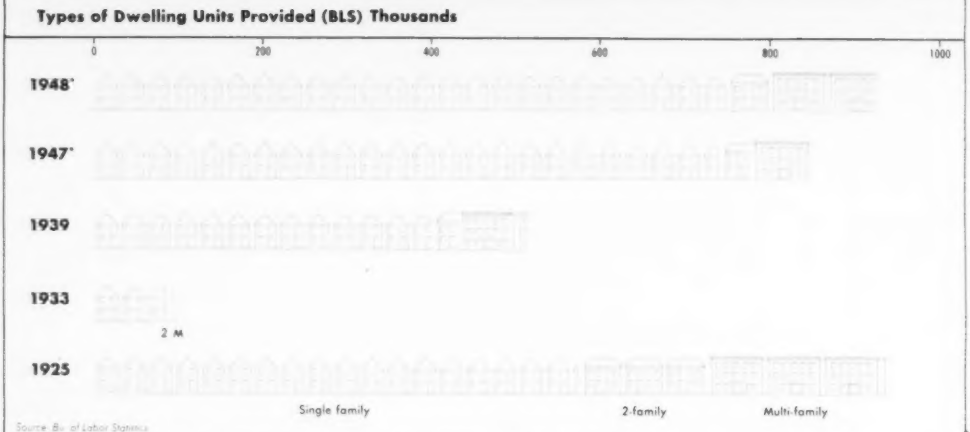
States	Mileage Built, 1948: Hard surface, incl. bit., conc., asph.	Other bituminous	Gravel or stone surfaced	Graded and drained	Total	Bridges, grade crossing elimination struc.	Expenditures, 1948—Budget for 1949—Thousands of Dollars (,000 omitted): New Contract Awarded 1948	New Contract Awarded 1949	Maintenance By State 1948	Maintenance By State 1949	Maintenance By Contract 1948	Maintenance By Contract 1949	New Equipment 1948	New Equipment 1949	Total Construction and Maintenance 1948	Total Construction and Maintenance 1949	% Change in 1949
Me	55	232	....	....	287	57	$10,458	$7,162	$5,338	$5,500	....	....	$188	$100	$15 796	$12 662	− 20
N. H	31	57	6	....	94	14	5,000	4,000	4,500	4,100	....	....	100	350	9 500	8 100	− 15
Vt	17	170	....	....	187	37	2,576	2,750	3,946	2,850	....	....	168	75	6 422	5 600	− 13
Mass. [1]	65	....	....	....	65	24	9,663	21,058[2]	8,338	4,051[3]	747	802[3]	500	320[3]	18 748	25 611[3]	+ 37
R. I	36	....	....	....	36	2	5,000	6,000	2,000	2,000	....	....	160	100	7 000	8 000	+ 14
Conn	41	13	35	10	99	32	16,330	22,300	6,800	7,500	....	....	1,300	950	23 130	30 030	+ 30
New England	245	472	41	10	768	166	49,027	63,470	30 822	26 001	747	802	2 416	1 895	80 596	89 973[1]	+ 12
N. Y	142	327	2	10	536	55	90,097	140,000	20,961	22,000	4,000 est.	4,000	1,000	1,000	115 058	166 000	+ 44
N. J. [4]	577	8	5	12[5]	85[5]	38	40,204	31,512	7,030	7,200	164	180	581	600	47 398	38 892	− 18
Pa	578	735	428	23	1,795[5]	500	117,912	27,000	27,830	29,800	0	0	3,532	4,000	145 742	56 700[10]	− 61
Md	52	26	13	....	265[5,6]	18	30,274	55,000	4,190	4,938	594	500	659	954	35 058	60 438	+ 72
D. C	27	8	1	3	39	3	4,170	3,570	1,023	920	314	440	100	100	5 507	4 930	− 10
Del	60	14	....	....	74	3	4,800	4,500	1,400	1,650	502	500	110	90	6 702	6 650	− 8
Mid. Atlantic	916	1138	449	48	2,794[5,6]	617	287,457	261,582	62 434	66 288	5 574	5 620	5 982	6 744	355 465	333 410	− 6
Va	56	386	5	15	456	65	7,000	24,000	14,500	14,500	2,250	2,500	500	750	23 750	41 000	+ 73
W. Va	170	813	374	164	1,521	72	24,189	....	20,229	[7]	0	[8]	2,975	[8]	44 418	....	....
N. C	531	555	24	77	1,219[9]	87	42,093	50,000	19,600	22,000	0	0	2,602	2,500	61 693	72 000	+ 17
S. C	8	1,204	....	11	1,221	41	21,394	20,000	5,809	6,000	1,700	1,500	1,000	800	28,894	27,500	− 5
Ga	150	1,255	2	216	1,649[9]	113	43,883	16,000	5,608	3,200	1,953	1,100	1,222	700	51,444	20,300	− 61
Fla	127	318	....	50	495	52	18,549	20,572	8,353	5,537	....	....	1,286	None	28,902	26,109	− 29
Ala	900	....	....	800	1,700	110	9,869	6,000	3,128	3,000	....	....	1,023	1,023	12,997	11,000	− 15
Miss	39	245	63	74	421	58	9,225	9,000	3,730	3,000	0	0	518	500	12,925	12,900	....
La	92	356	143	15	606	30	23,676	25,000	10,450	11,066	2,377	2,330	720	1,500	36,505	38,396	+ 5
Ky	207	621	62	13	903	30	15,612	25,000	8,964	9,000	442	500	1,380	1,500	25,018	34,500	+ 38
Tenn	283	387	189	219	1,078	....	31,000	39,000	2,000	3,000	Incl. in new constr.		1,000	1,250	33,000	42,000	+ 27
South	2,561	6,134	862	1,654	11,269[9]	....	246,402	....	102,332	....	....	....	14,226	....	357,546	....	....
Comparable States (1 missing)					....	658(1)	222,303(1)	234,572	82,103(1)	83,203	8,722	7,930	11,251(1)	10,523	313,128(1)	325,705	+ 4
Ohio	688	197	132	0	1,017	144	58,884	60,000	19,900	20,500	5,300	6,500	3,500	2,500	83,684	87,000	+ 4
Ind	504	17	25	4	550	49	25,800	20,000	8,800	6,880	325	350	817	900	33,085	27,230	− 17
Ill	284	332	149	72	837	36	40,594	....	13,525	....	234	....	1,910	....	54,353	....	....
Wis	206	1,999	277	49	2,531	124	31,963	30,000	8,095[4]	11,000[4]	800	3,000	County Purchases		40,918	44,000	+ 8
Mich	193	307	71	32	603	53	30,588	30,000	2,681	2,625	8,639	8,473	489	524	41,908	41,895	− 3
Mid. West	1,875	2,852	654	157	5,538	406	187,829	....	50,681	....	15,358	....	6,716	....	253,868	....	....
Comparable States (1 Missing)					....	....	147,235(1)	140,000	37,156(1)	41,605	15,124(1)	18,323	4,806(1)	3,924	199,515(1)	199,328	....
Minn	193	87	25	335	640	35	20,300	18,000	12,338	[11]	2,250	[11]	1,150	750	34,888	....	....
Iowa	123	47	144	189	503	71	12,616	3,842[9]	4,889	5,630	1,102	1,200	1,125	700	18,607	10,672	− 43
Mo	149	630	530	36	1,371[9]	141	25,328	33,000	10,500	10,500	....	....	1,427	750	35,828	43,500	+ 21
Ark	1	330	35	0	366	7	1,800	11,000[7]	6,900	8,500	0	0	613	780	8,700	19,500	+124
N. D	234	....	450	223	907	12	7,388	7,800	2,980	3,203	1,200	800	824	600	11,568	11,500	− 1
S. D	8	260	227	216	711	29	8,229	8,000	4,500	4,500	....	....	527	400	12,729	12,500	− 2
Neb	30	270	268	264	832	82	13,724	7,500[11]	5,160	5,250[11]	740	750	450	500	19,624	13,500	− 31
Kan	80	543	1,401	507	2,540	77	20,036	20,000	6,286	[9] 6,391	1,705	1,985	1,671	600	28,827	28,376	+ 1
Okla	119	781	636	966	2,502	99	18,881	22,500	728	750	3,761	4,800	750	900	23,370	27,750	+ 19
Tex	2,753	1,095	46	339	4,239[9]	326	73,407	50,000	19,672	15,000	0	0	3,556	1,800	93,079	65,800	− 30
Mont	280	not seg.	232	33	545	69	13,164	13,085	5,158	4,600	301	800	805	300	18,623	18,185	− 2
Wyo	17	183	136	163	500	....	9,500	8,500	2,200	2,500	0	0	750	700	11,700	11,000	− 6
Colo	1	1,281	167	33	1,482	78	18,000	18,000	4,220	4,050	....	....	747	500	22,220	22,050	− 1
N. M	105	195	36	....	335	7	9,888	12,500	2,337	2,500	393	2,500	684	500	12,618	17,500	+ 39
W. of Miss.	4,102	5,722	4,332	3,304	17,473[9]	....	252,261	233,427	87,868	....	11,452	....	14,479	9,750	351,581	....	....
Comparable States (1 Missing)					16,653[9]	1,033(1)	252,261	233,427	75,536(1)	73,371	9,202(1)	12,235	14,479	9,750	336,993(1)	301,833	− 11
Idaho	....	220	62	....	282	5	5,403	12,455	2,900	3,000	....	....	178	210	8,383	15,455	+ 86
Utah	....	135	42	6	183	17	4,700	5,000	2,800	3,000	105	....	220	350	7,685	8,000	+ 5
Ariz	0	216	16	54	286	55	10,713	10,000	1,800	1,750	....	....	442	400	12,513	11,750	− 6
Nev	0	208	37	0	245	12	4,488	7,862	1,211	1,467	0	0	285	250	5,799	9,329	+ 61
Wash	60	339	115	101	615	36	25,500	17,000	6,015	6,500	153	700	493	650	31,678	24,200	− 24
Ore	104	164	124	119	511	34	5,543	6,320	8,013	9,200	820	500	1,110	1,150	14,376	16,080	− 12
Calif	488	210	139	834	135	80,266	75,429	20,290	19,000	2,566	....	4,150	3,500	103,122	94,429	− 8
Far West	649	1,492	396	419	2,956	294	136,713	134,666	43,039	43,977	3,644	1,200	6,878	6,510	183,396	....	....
Comparable States (1 Missing)					....	....	136,713	134,666	43,039	43,977	....	....	6,878	6,510	180,725	179,243	− 1
U. S.	10,348	17,810	6,734	5,596	40,798[9,12]	....	1,159,779	....	377,176	....	45,497	....	59,697	....	1,582,452	....	....
Comparable States (1 Missing)					....	3,174(2)	1,094,996(3)	1,067,117(3)	331,084(3)	333,765	43,013(2)	45,810[3]	45,812(2)	39,346[3]	1,446,422	1,428,632[3]	− 1
Percent Change from Previous Year								−2		+1		+6		−14		−1%	

[—Fiscal year. [1] MASS. for 1949. To June 30 only. Proj. authorized after July 1 not incl. [2] N. J. Hard surface incl. 25 mi. dual. Graded and drained incl. 1 mi. dual, 2.7 mi. multiple lane. [3] W. VA. State Legislature now in session cannot estimate full program. $50 million bond issue for secondary roads approved by electorate last Nov., but enabling act not yet passed by Legislature. [4] WIS. By county forces. [5] MINN. Legislature meeting. [6] IOWA. Based on present statutes. Legislature now in session and bill will be introduced to provide additional 6 to 7 million dollars which with Federal Aid would approx. $13 million. [7] ARK. Based on estimated present income; proposed legislation includes measures to increase annual income and submit to voters proposal to borrow $7 million annually for 4 years. [8] MD. 170 mi. Widening and resurfacing existing highways. [9] Includes soil surfaced: N. J. 3 mi., PA. 11 mi., MO. 4 mi., N. CAR. 32 mi., GA. 26 mi., MO. 6 mi., TEX. 6 mi., Total 88 mi. [10] PA. Carryover from 1948 contracts $75 million. [11] TENN. Blizzard conditions require revision to new contracts $4 million, maintenance $7 million, Total $11 million. [12] MINN. Later report, state maintenance $10.1 million '48, $0.5 million '49.

HOUSING CONSTRUCTION, FINANCING, COSTS

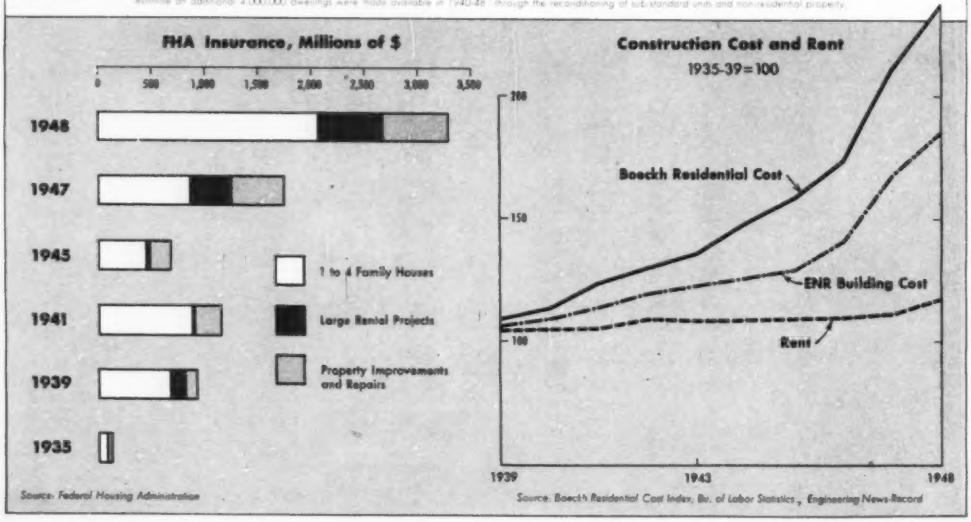


Source: Bu. of Labor Statistics



Source: Bu. of Labor Statistics

*Note: Permanent housing units reported by the Bureau of Labor Statistics 1940 through 1948 total 5,121,700. President Truman's economic advisers estimate an additional 4,000,000 dwellings were made available in 1940-48 through the reconditioning of sub-standard units and non-residential property.

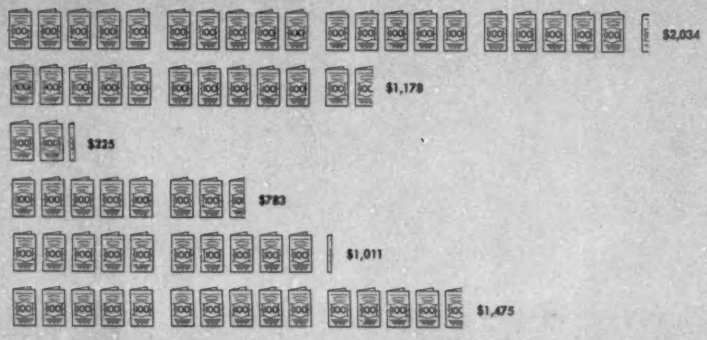


Source: Federal Housing Administration

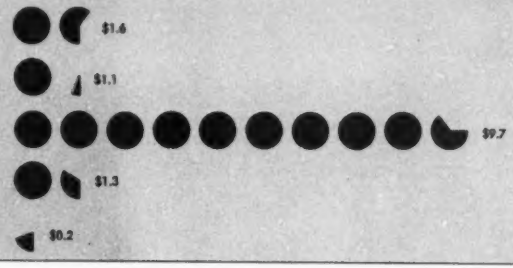
Source: Boeckh Residential Cost Index, Bu. of Labor Statistics, Engineering News-Record

FINANCING PUBLIC CONSTRUCTION

By State and Municipal Bond Sales, Millions of $



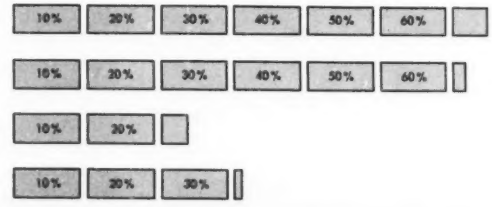
By Federal Appropriation, Billions of $

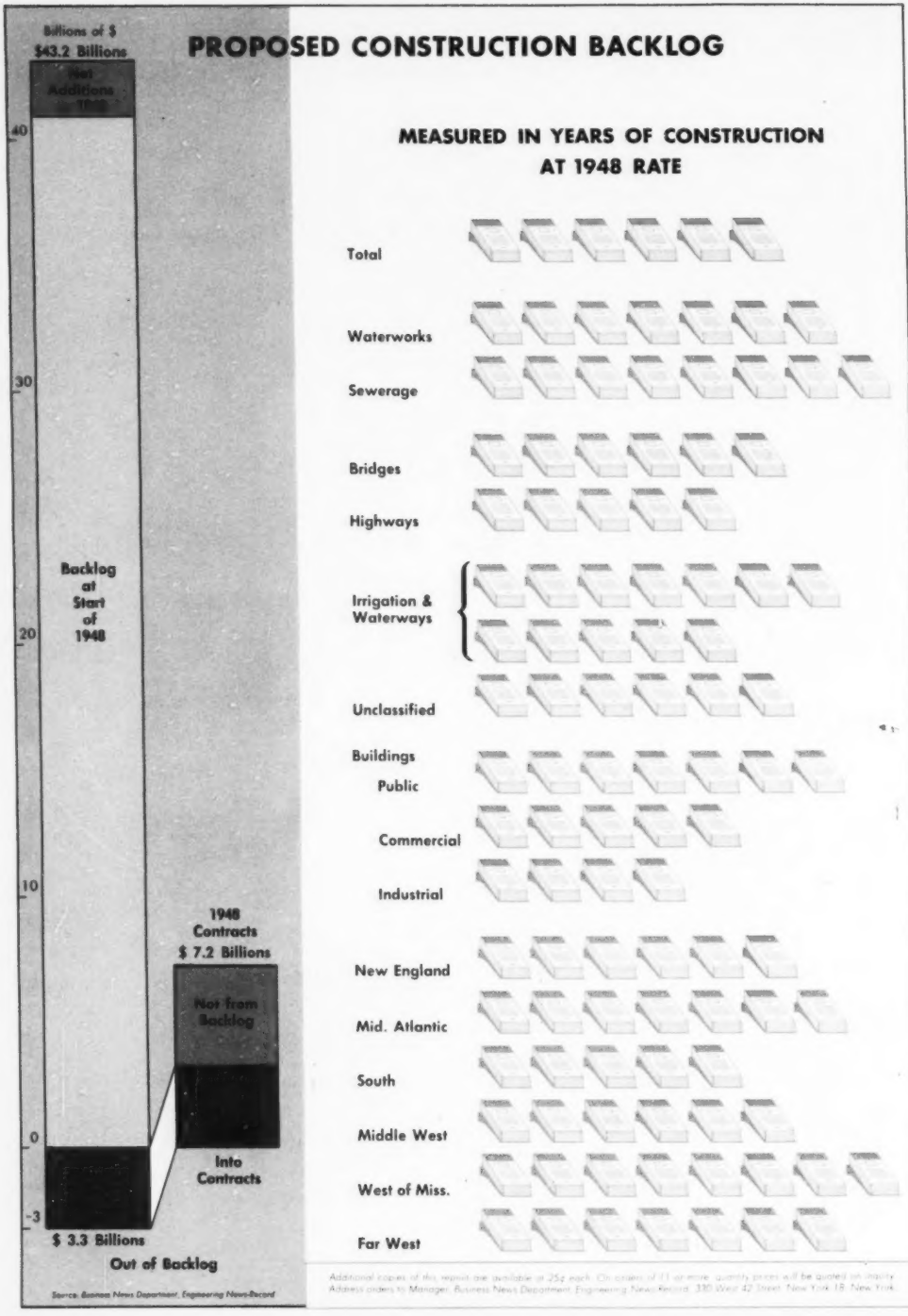


FINANCING PRIVATE CONSTRUCTION

By Corporate Security Sales, Millions of $

By Profits Plowed Back—Percent of Total (Bldg. & Equip.)




PROPOSED CONSTRUCTION BACKLOG
MEASURED IN YEARS OF CONSTRUCTION AT 1948 RATE
Billions of $
$43.2 Billions
Net Additions 1948
40
30
20
10
0
-3
Backlog at Start of 1948
1948 Contracts
$ 7.2 Billions
Not from Backlog
Into Contracts
$ 3.3 Billions
Out of Backlog
Source: Bonnar News Department, Engineering News-Record
Total
Waterworks
Sewerage
Bridges
Highways
Irrigation & Waterways
Unclassified
Buildings
Public
Commercial
Industrial
New England
Mid. Atlantic
South
Middle West
West of Miss.
Far West
Additional copies of this report are available at 25¢ each. On orders of 11 or more, quantity prices will be quoted on inquiry. Address orders to Manager, Business News Department, Engineering News-Record, 330 West 42 Street, New York 18, New York.

THREE-MILE CREEK SEWAGE PLANT at Mobile, Ala.—one of two disposal projects—will provide chlorination, primary clarification, heated sludge digestion, and sludge-drying beds.

SUMMARY OF MAJOR PROJECTS

Reviews of projects currently in the news with information on costs, size and features

SEWAGE DISPOSAL

SAN FRANCISCO, CALIF. — Bids called early in 1948 on units of the North Point sewage-treatment plant were rejected. Later, new bids were called and an $8,289,000 contract was awarded for the sedimentation plant. Work will start in Jan. 1949. The sludge-treatment plant is scheduled for bids later this year. It will be followed at a later date by bids on influent and effluent channels and twin 10-in. sludge force lines, 6 miles long.

OAKLAND, CALIF., VICINITY — The $24,000,000 program to provide interception and treatment of sewage from a population of more than 750,000 in Alameda County is well under way with 8 of 21 miles of interceptors under contract. Administered by Special District No. 1 of the East Bay Municipal Utility District, the program in 1949 will include bid calls for construction of the treatment plant and a 3-mile outfall as well as more interceptors. Sand fill for the treatment plant, amounting to 310,000 cu. yd., and 3,750 sand drains have been placed.

PORTLAND, ORE.—Three major interceptor units are complete or nearing completion on Portland's $14,000,000 interceptor and disposal project. Bids on the treatment plant will be called early this year. With the site graded and equipment ordered, the project is expected to be complete within 3 years.

LAKE CITY, WASH.—Voter approval of bonds totaling $7,500,000 has launched what has been termed "the nation's largest suburban sewer project" in the Lake City Sewer District just north of Seattle, Wash. First contracts will be let in March, 1949. Project includes a 7 mgd. activated sludge plant estimated at $1,500,000, more than 200 mi. of lateral, interceptor and trunk sewer lines varying up to 48-in. in dia., and 11 pumping stations.

LOS ANGELES, CALIF.—Contracts under way on the $41,000,000 sewage disposal project at Hyperion showed the following percentage of completion as of Jan. 1, 1949 (figures in parentheses are contract amounts): Headworks ($1,389,100) 91 percent; 12-ft. dia. outfall extending 5,000 ft. offshore ($3,517,800) 99 percent; preparation of site, including moving 14,200,000 cu. yd. of sand ($3,494,300) 99 percent; effluent outfall connection ($195,400) 87 percent; primary-settling system ($3,613,900) 25 percent; digestion system ($3,991,100) 49 percent; filter, drier and fertilizer storage system ($6,300,100) seven percent; power and blower plant ($3,583,600) four percent; general piping ($1,049,600) zero percent. The outfall will be put in service about April 1 and the other units will go in service when all portions of the 245-mgd. activated-sludge plant are completed. Contracts to be let in 1949 are: Power and light distribution, filter and drier stack, aeration system, final settling system, elutriation and sludge concentration, warehouse and shops, administration and laboratory, influent connection and landscaping.

HONOLULU, T. H.—Some $3,500,000 of a $22,000,000 5-year program is already complete or under contract. This includes a pumping plant, a 6,000 ft. tunnel and pressure and gravity sewers. The 1949 program to cost another $3,500,000 will include a 79-in. outfall extending 3,600-ft. offshore.

STOCKTON, CALIF.—Work will be completed early this year on a $1,330,000 contract for the primary-treatment facilities of a 20-mgd., high-rate trick-

IN LOS ANGELES, primary-settling basins are under construction for the 245-mgd. sewage-treatment plant at Hyperion.

AT COLUMBUS, OHIO, part of the $2,162,000 expansion program of the disposal works is the $505,000 grit-separation chamber which includes mechanical screens, grit separation with air diffusion and clam-bucket-on-bridge-crane sediment removal.

ling-filter plant. Part of the secondary-treatment installation may be built this year if money is available.

BOISE, IDAHO—Construction of the first major sewage disposal plant in Idaho—an activated sludge plant—was started in July 1948, with completion scheduled for next September. Included in the $1,375,000 project is a 27- to 48-in. intercepter sewer and a 12-mgd. disposal plant. Effluent will be chlorinated and dumped into the Boise River, which is used for irrigation of root crops.

WASHINGTON, D. C.—Enlargement of the District of Columbia sewage treatment plant is to be carried out under a $1,267,000 contract that is expected to be let in the near future. The project, which is scheduled to run more than 20 months, will add four sedimentation tanks and four sludge-digestion tanks, increasing the total numbers of units to sixteen and twelve, respectively. The design of the new facilities will closely follow that of the existing tanks.

CHICAGO, ILL. — A $58,160,000 bond issue to finance the first part of a major sewer construction program, estimated to cost $120,000,000, has been approved. In 1948, the Bureau of Sewers completed contracts totaling $2,300,000 on two systems serving 1,000 acres on the north side and 5,800 acres in the southwest portion of the city. An award has been authorized on a $970,000 low bid for extension of the latter system. Work is nearing completion on a $3,050,000 section of a line that will ultimately have a drainage area of 7,000 acres in the west central district, and bids will be asked this year for a second section. Tunneling on a $1,525,000 stretch of south-side sewer, awarded in 1948, has been completed and open-cut will begin this spring. Construction expenditures for 1949 will be $8,000,000, including work on the first section (twin 12 x 12-ft. concrete barrels) of the $11,000,000 Roscoe St. System to drain 3,500 acres in the northwest section. A low bid of $1,580,000 has been received on a section of the Central South Side system—part of the comprehensive sewer plan being built jointly by the city and the Sanitary District of Chicago.

CHICAGO SANITARY DISTRICT—The construction program includes $33,500,000 for sewage treatment works and $59,600,000 for sewers. About 45 percent in each category has been completed. Contracts totaling more than $8,500,000 are now underway for treatment works and $5,800,000 will be awarded this year. At the West-Southwest works, facilities are being added to provide activated sludge treatment for the 400 mgd. effluent of the West Side Imhoff tanks. With these in service, all sewage in the District (1,050 mgd.) will receive complete treatment. Sludge disposal facilities also are being expanded to heat-dry the sludge, which will be 500 tons per day, dry basis. On sewer construction, contracts of $24,300,000 are outstanding, with additional awards of $8,300,000 scheduled for 1949. Principal items are 13½ mi. of 16½-to 20-ft. tunnel sewer on the South Side; 2 mi. of 5½-ft. tunnel outfall from Evergreen Park; and 8 mi. of 2-to- 9-ft. sewers in tunnel to serve the north-shore suburbs. The first two projects are expected to be completed late this year.

CANTON, OHIO—Bids will be taken this spring for a $3,600,000 intercepting sewer and 20-mgd. activated-sludge plant with facilities for grinding all city garbage. The sewage-garbage sludge will be digested in externally heated tanks and disposed of by spreading over a city-owned farm. A sewer-rental ordinance for the project

is in effect and collections at a reduced rate are now being made, although bonds have not been sold.

COLUMBUS, OHIO – Enlargement and improvement of the sewage-treatment plant is well underway. A $505,000 housed-in grit collector with mechanically cleaned screens, air-diffusion equipment and overhead buckets is 90 percent complete. Replacement of diffuser plates in the aeration tanks with swing-type diffusers has been completed under a $303,000 contract. Under a $178,000 contract, primary-settling tanks are being improved by addition of overflow weirs, removal of concrete covers, installation of new sludge-discharge piping, and conversion or the original grit channels to pre-aeration chambers. Bids will be taken this year on a 1000-kw., dual-fuel-engine generator expected to cost $126,000; a $250,000 addition to the generator station to house this unit; and eight sludge digestors that will increase unit capacity from 1.7 to 3.0 cu ft. per capita for 400,000 population. Estimated cost of the digestors is about $800,000.

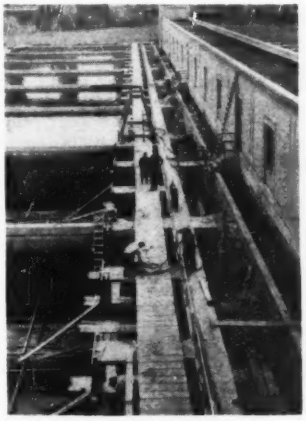
MADISON, WISCONSIN — A $2,210,000 expansion of the Madison Metropolitan Sewerage District's collection facilities is underway. Included are: Three pumping stations, interceptors, and force mains to the Nine Springs treatment plant. A $750,000 third addition to this plant—a combination Imhoff and trickling-filter plus activated-sludge plant—also is under construction to increase capacity from 13 to 20 mgd. Preliminary settling facilities are being increased 50 percent, aeration tanks by 60 percent and final settling tanks by 45 percent. Completion of both projects is scheduled for April 1950.

HOUSTON, TEXAS — Sludge from two sewage treatment plants, now lagooned, will be made into fertilizer in a $1,250,000 drying plant, scheduled to get underway this year. Vacuum filters will produce 70 tons of dewatered sludge per day.

MOBILE, ALA.–A $2,200,000 sewerage and sewage disposal program is being carried out. Work includes: The 2.8-mgd., primary-treatment Three-Mile Creek disposal plant; the 1.4-mgd. primary and secondary treatment Eslava Creek plant; and trunkline as well as new street sewers.

ST. LOUIS, MO. — To implement the recently-established refuse-disposal program, two $1,000,000 incinerators will be built this year. With a capacity of 400 tons per day, each plant will have four furnaces in a 211 × 111-ft. building, and twin chimneys 175 ft. high. A 17,000-cfm. blower for each furnace will furnish excess combustion air to reduce furnace and stack temperatures. Detailed plans, which will enable general contractors to bid on the work, are complete.

AT PORTLAND, ORE., interceptor and main sewers with a 120-in. semi-elliptical section are a major portion of the $14,000,000 sanitation program.



WARD'S ISLAND DISPOSAL PLANT –Improvements at New York City's plant include influent channel to change inlets from the center to one end of final settling tanks.

PITTSBURGH, PA.–Initiation of the Allegheny County Sanitary Authority program for collection and treatment of sewage in the metropolitan area depends upon execution of long-term agreements with 83 municipalities that have indicated their intention to take authority services, and 13 other units that are expected to participate. The contracts provide for: (1) Payment of partial sewerage-service charges beginning in Jan. 1950; (2) Partial charges to be one-third of the calculated final charge when plant is in operation, to defray engineering, administrative and interest costs during construction; (3) Sewerage systems of the participating municipalities to be turned over to the authority as a basis for initiation of partial charges; and (4) The authority to bill and collect all charges but require municipalities to guarantee all accounts. At the end of the year only the Borough of Braddock had empowered its officials to execute the required contract, but other municipalities are expected to follow.

PORTSMOUTH, VA. — The first sewage disposal plant, at Pinners Point, will go into operation this spring as part of the general cleanup of Hampton Roads. The 10.7-mgd., $920,000 primary-treatment plant includes separate sludge digestion, chlorine contact and clutriation, and vacuum filtration. All operating power is generated by sludge-gas engines.

TAMPA, FLA.—Bids will be taken next month on the first sections of a $10,000,000 sewerage and disposal program. A large part of the work will be sewers, pumping stations, interceptors up to 60 in., and a 78-in. concrete outfall discharging 3,000 ft. out in Tampa Bay. A 35-mgd. partial treatment plant —the city's first—is also included.

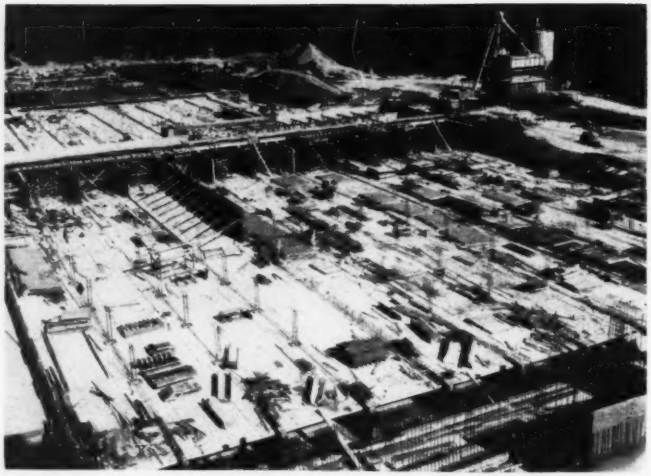
BOSTON, MASS.–Construction contracts for foundations, aeration and sedimentation tanks, influent and effluent conduits, grit channels, main-building substructure, digestion tanks, and sludge-disposal line for the $6,500,000, 300 mgd. Nut Island sewage-treatment plant were let last year. Expected to be let this year are contracts for main-building superstructure, administration, chlorinating, utility, gas buildings and digestion control buildings and pump houses, gas-storage sphere, and experimental fertilizer plant. Completion of the project is planned for 1950. The 80-mgd., $2,000,000 Alewife Brook Conduit for storm water is about ten percent complete. Some work is in progress on borings, designs and investigations for the $11,000,000 North Metropolitan

Relief Tunnel that will convey sewage to the proposed $6,000,000 Deer Island treatment plant.

WINCHESTER, VA.—A $1,024,000 sewer and sewage-treatment program is about 40 percent complete. The work consists of 29,000 ft. of sewers and a 2.4-mgd. bio-filtration treatment plant. The plant includes coarse screens; grit chamber; communitors; grease-removal tanks; three, 125,000-gal. primary clarifiers; primary and secondary 125-ft. dia. high-rate filters; two, 225,000-gal. final clarifiers; two, 250,000-gal. digestors; eight sludge-drying beds and a control building.

BUFFALO, N. Y. — The "Quarry Project" consisting of a 17.5-mgd. storm-water retention basin, a 6,700-gpm. pumping station, a 42-in. outlet sewer and a 7-ft. horseshoe inlet trunk sewer is about 25 percent complete. With $645,000 in two contracts to be let, total project cost is about $2,000,000. Completion is scheduled for Sept. 1949.

NEW YORK CITY—Construction of long-needed sewage treatment plants will be financed as city-wide assessable improvements. The construction schedule calls for six major plants in the next five years and completion of the entire program in ten years. With $4,860,000 in active contracts, work has been resumed on Brooklyn's $9,240,000 26th Ward plant. The 60-mgd. activated-sludge plant will serve about 350,000 persons in the Jamaica Bay area. Preliminary authorization has been obtained for construction of the $22,000,000 Owls Head treatment works on Upper New York Bay. This 160-mgd. plant utilizing the newly developed high-rate, activated-sludge process will serve more than 1,000,000 persons. The first contract for bulkhead, landfill and outfall is 90 percent complete. Low bids received for additional work are: Pump and power house — $3,748,240, and electrical equipment—$748,865. Contracts for rehabilitation and improvement of the Coney Island and Wards Island sewage treatment plants, totaling $570,000 were let in 1948. The $1,134,000 East Bronx intercepting sewer, which will discharge to the Wards Island plant, is about 40 percent complete. This project consists of 5,890 ft. of 42 to 48-in. pipe. Work on the $1,874,000 Whitestone interceptor-collector in the Borough of Queens has recently been authorized. This sewer, which will drain a 3,200-acre area tributary to the upper East River, is 17,000 ft. long and varies from 54 to 60 in.



TO PROVIDE MORE WATER—Capacity of the Metropolitan Water District of Southern California will be double this summer with completion of the $4,000,000 water-softening and filtration plant near La Verne, Calif.

MUNICIPAL WATER SUPPLY

MOKELUMNE AQUEDUCT—The $22,000,000, 81-mile supplementary line will be completed and in service by April 1. Under gravity flow, it will increase capacity of the East Bay Municipal Utility District by 50 mgd. The existing line with booster plants furnishes 98 mgd. The water demand of the district—including Oakland, Calif., and other nearby cities—has averaged 106 mgd. recently and this has been met by use of completed sections of the new line. Ultimate capacity of the two lines will be 214 mgd. after future addition of two pumping plants on the new line.

SOUTHERN CALIFORNIA—At the end of 1948 work on doubling the capacity of the Metropolitan Water District's 100-mgd. LaVerne softening and filtration plant was about 70 percent complete. Work on the $2,592,400 construction contract is expected to be completed this spring, ahead of schedule, so that the extra capacity will be available to meet summer water demands.

HETCH HETCHY AQUEDUCT—More water for San Francisco is coming via a second line across the San Joaquin Valley and a line around the south end of San Francisco Bay, bypassing two lines across the bay. Some 33 miles of 62-in. concrete pipe will be laid by September on the San Joaquin line at a cost of $8,000,000. Bids will be called in March on the 35-mile, 72-in. line around the bay. Cost of this section is expected to reach $12,000,000.

PHOENIX, ARIZ.—A $6,000,000 expansion program is rapidly nearing completion with the 50-mgd. filter plant scheduled for early operation. Major uncompleted work includes the $800,000 spillway gates on Horseshoe Dam and a booster station. Under a new bond authorization more than 6 miles of 60- and 54-in. lines will be built.

SAN DIEGO, CALIF.—Voter approval of a $4,500,000 bond issue will permit award in 1949 of a construction contract for the 66-mgd., Alvarado Treatment Plant for which $1,750,000 is budgeted. Equipment has been ordered and the plant site graded. Pipeline construction will take the $2,750,000 remaining of the bond money. In 1948, the San Diego Aqueduct delivered 20,000 mg. of Colorado River water but reservoirs in the San Diego system lost 6,000 mg. from storage due to the lowest runoff since 1904.

PHILADELPHIA, PA. — The new $1,703,000 Torresdale Filtered Water Pumping Station, which will improve distribution service in half of the city, is 95 percent complete. Electric-motor-driven pumps included in the station are: Four 40-mgd. and two 20-

HOW TO CUT COSTS

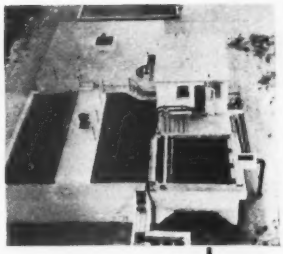
WITHOUT CUTTING CORNERS

and Increase Efficiency — Performance

Specify **THE CHICAGO 'PAKAGE' PLANT**

Sewage Treatment Process specifically for Industry and the Small Community

1. Shorter intercepter sewer. Closer location — no odors or flies.
2. Low first cost — complete treatment in one unit.
3. Simplified operation requires minimum supervision.



CHICAGO SWING DIFFUSERS AND PRECISION DIFFUSER TUBES

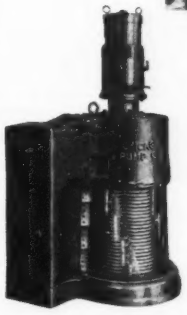
The most efficient aeration system available.

1. No stand-by tanks necessary — diffuser media easily cleaned in place.
2. High oxygenation efficiency with "Wide Band Aeration".
3. Less blower power due to 2' elevation of diffuser.

THE CHICAGO COMMINUTOR

Provides sub-surface screening with integral channel and rotating cutter

1. No additional expense for screenings disposal.
2. No bar screens to clean and maintain.
3. Continuous and automatic operation requires minimum supervision.



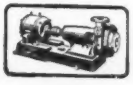
PROCESS AND PUMPING EQUIPMENT FOR THE TREATMENT OF INDUSTRIAL AND SANITARY WASTES

CHICAGO PUMP COMPANY

SEWAGE EQUIPMENT DIVISION

DEPARTMENT E

2300 WOLFRAM STREET — **CHICAGO 18, ILLINOIS**



Flush Kleen, Scru-Peller, Plunger, Horizontal and Vertical Non-Clogs Water Seal Pumping Units, Samplers, Swing Diffusers, Stationary Diffusers, Mechanical Aerators, Combination Aerator-Clarifiers, Comminutors.

CABLE ADDRESS "CHIPUMCO"

Easy to Operate
CHAPMAN CONE VALVE

With SIX Features that Give Top Performance

1. No obstruction to flow . . . waterway of valve is same diameter as pipe.
2. Plug is fully seated, open or closed . . . all seats are fully protected.
3. Valve is self-cleaning . . . no chance of fouling.
4. Automatic control or hand operation unwedges, rotates, and rewedges the plug.
5. Positive, easy closing prevents surging and wear on seats.
6. Valve is dependable for either regular or emergency service.

This extra-rugged, plug-type Cone Valve is built by Chapman for either automatic or manual control of a variety of liquids or gases. It is easy to operate . . . easy to maintain . . . free from leakage . . . the answer to many a control problem.

Available for electric, manual or hydraulic operation . . . with the particular type of controls best suited to the requirements of the installation. Write today for full information.

The
CHAPMAN VALVE MFG. CO.
INDIAN ORCHARD, MASS.

mgd. 200-ft. head units; and one 6-mgd. and three 3-mgd. 360-ft. head installations. Plans call for putting the Belmont taste-and-odor control plant with a daily ozone capacity of 1,250 lb. into operation early this year.

DENVER, COLO.—Continuing progress is reported on the $30,000,000 construction program to improve water facilities. A $1,000,000 clear-water reservoir was completed during 1948 and a like amount was spent for extension of city water mains. Now under construction, at a cost of $4,000,000 is a 10-mi. conduit designed to deliver 200 mg. of water from the South Platte River to Marston Lake Reservoir, which supplies two filtration plants. The line will be 90-in. reinforced concrete pressure pipe except for 3,000 ft. of tunnel. Some 20 mi. of cast-iron mains and 6 mi. of prestressed concrete feeder up to 42-in. dia. are planned for construction this year. Estimated cost is $1,500,000. Also included in the expansion program are a large reservoir to store flood waters, development of additional sources of supply in the mountains near the city, new conduits for delivery of raw and filtered water, and a substantial increase in treatment-plant capacities.

DAYTON, OHIO—Work will start this year on a 96-mgd. softening plant to treat water from 30 wells on Rohrer Island in the Mad River. The natural flow of the wells will be supplemented by damming the river below the island and leading water over recharge areas that will act as roughing filters. Water will flow through an 84-in. concrete conduit to the new plant. Estimated project cost is $4,100,000.

EVANSTON, ILLINOIS — Completion this year of a $2,700,000 expansion program at the existing 24-mgd. plant for filtering Lake Michigan water will double its capacity to 48 mgd. Included are a new chemical house and service and engineering buildings. A feature of the project is complete electrification of the plant's pumping station to eliminate objectionable smoke.

MOLINE, ILLINOIS — Under a $1,415,000 waterworks improvement program, a 5-mgd. filtration plant is being converted to a 7.5-mgd. lime-softening plant. The project includes two new filters, a rapid mixing basin, sedimentation and reaction basins, and new chemical facilities. Process sludge will be centrifugally dewatered. Included in the program is a new shore well and intake from the Mississippi River, and conversion of steam pumps to electric operation.

MECHANICAL and electrical equipment is being installed in the 30-mgd., $1,500,000 water-treatment plant for Phoenix, Ariz. The project is located at the confluence of the Salt and Verde Rivers.

DES MOINES, IOWA—A 48-mgd. iron-removal and water-softening plant is 40 percent complete and is scheduled to go into operation late this year. The $2,100,000 lime-soda ash plant is designed to remove iron content completely and reduce hardness from an average of 325 to about 85 ppm.

LOUISVILLE, KY.—The municipally-owned Louisville Water Co. is electrifying all its pumping stations under a $650,000 program. At its Riverside Station, two 30-mgd. and one 60-mgd. pumps have already been switched from steam, and installation of an additional 60-mgd. low-lift pump is underway. At the Crescent Hill Station, three vertical 30's, one 40, and a vertical 50-mgd. pump are being installed with 13,800-v. motors. Two 13,800-v. feeders and twin busses, with an automatic switch, will prevent the motors from losing synchronization in the event of power failure in one line.

DELAWARE WATER SUPPLY—By the end of 1949 the New York Board of Water Supply will have let contracts for all major works in the present 540-mgd. development of this supply. The principal elements are: Merriman Dam in the Hudson River watershed at the terminus of the existing 85-mile Delaware Aqueduct to New York, Downsville and Neversink Dams in the Delaware River watershed; and two trans-divide tunnels, one from each of the Delaware reservoirs directly to the reservoir of Merriman Dam. The $18,120,000 Merriman Dam was 75 percent complete at the end of last year, with 1948 expenditures of $3,740,000 and completion expected by December 1949. At that time Merriman's reservoir will begin to serve New York. On Neversink Dam, $25,500,000 of an estimated $31,900,000 was spent or obligated in 1948, and the job was 22 percent complete. This work will be finished in 1953. Work began at Downsville during the year and was 22 percent toward 1953 completion in December. $7,420,000 was spent in 1948 and the remainder of a $42,000,000 total will be placed under contract this year. The 5-mile $15,640,000 Neversink-Merriman tunnel was begun at the end of 1948, for 1952 completion. The Downsville-Merriman tunnel, to be 25 miles long and cost $46,000,000, will be let in 1949.

BALTIMORE, MD.—The first $9,130,000 contract for driving a tunnel to the Patapsco River water supply, which consists of 14,200 ft. of 10-ft. dia. monolithic concrete-lined section, is about 80 percent complete. Amounting to nearly $9,717,800, the contract for the final section of the tunnel was let last year. Work consists of 51,600 lin. ft. of rock excavation to be done through three shafts and a portal and 11,000 ft. of 11-ft. dia. concrete lining. Total funds made available for water-supply improvements since 1943 was brought to $32,000,000 by action of voters in approving an additional bond issue for $9,500,000 in the November election.

AKRON, OHIO—Rehabilitation of the 34-yr.-old water-treatment plant is underway. Contracts in force of about $1,400,000 provide for furnishing and installing two 40,000-lb. per hr. steam-generating units, a 20-mgd.

TRUCKS THAT HAVE ADEQUATE PLATFORMS . . . ROOM TO MOVE AROUND IN . . . SAVE YOUR DOLLARS AND TIME!

Today, with mounting costs all along the line, *loading platform congestion* is a serious problem. No matter how much money you pour into new tools and methods—inadequate shipping facilities will always eat into your profits.

Right now, make a study of your "bottleneck" areas. Minor remodeling can often take care of normal plant expansion for years to come.

CONSULT YOUR TRAFFIC MANAGER, ARCHITECT AND ENGINEER

THE *AMERICAN TRUCKING* INDUSTRY

AMERICAN TRUCKING ASSOCIATIONS, WASHINGTON 6, D. C.

steam-driven pump, two 500-kwh. generators and electrical-control equipment. It is expected that contracts totaling about $1,200,000 for additional work will be let in 1949.

TAMPA, FLA.—Four rapid-sand filters that will increase capacity by 50 percent, a lime house with pneumatic unloader and two 15-mgd. upflow settling tanks are complete. Recently let were contracts for a boiler house; two 35,000-lb. per hour steam boilers; 25-mgd. and 20 mgd. steam-drive pumps for low and high service, respectively; and a 300 kw. turbine generator. Capacity of the plant when complete will be 32 mgd. Total cost of improvements is $2,156,030.

CHESTER, PA.—To replace the salt-encroached Delaware River supply, the Chester Municipal Authority has embarked on a $14 million water- development program. The project consists of an earth-filled dam that will impound 2 billion gal. and permit a draft of 30 mgd.; an 18-mgd. filter plant; five and 20-mg. reservoirs; four 250-ft. head pumps designed to supply from 6 to 20 mgd. in 2-mgd. increments; and force and gravity mains from the plant to the city. With the filter plant and dam about 20 percent complete and contracts for the mains to be let this year, the project is expected to be in operation early in 1951.

BOSTON, MASS.—Work on the $9,530,000 City Tunnel section of the Hultman Aqueduct is about 15 percent complete. At the end of the year 15,470 ft. of 12-ft. dia. tunnel as well as 3,240 ft. of 10-ft section had been driven. Total length of the City Tunnel is about 5¼ miles. Contracts have been awarded for construction of the 24,000-ft. 48-in. and the 46,000-ft., 36-in. sections of the Chicopee Valley Aqueduct. Reinforced-concrete, steel-cylinder pipe is being delivered under a $1,500,000 order. Bids will be asked this spring for construction of the final section, control equipment and a 23-mg. reservoir. Total project cost is about $4,000,000. Studies and reports have been completed for a 25-mile, $10,000,000 aqueduct to furnish water to cities in the Merrimack Valley from the Wachusett Reservoir.

MIAMI, FLA.—A $1,600,000 project for increasing capacity of the Hialeah Water Softening plant from 40 to 40 mgd. has been completed. Included in the work were: Five new wells, mixing tanks, a 20-mgd. clarifier, carbonating and chlorine-contact basins, chemical-feed and chlorination equipment, a lime-recovery plant and a 2-mg. clear well.

DETROIT, MICH.—Total dollar volume of waterworks projects under construction in 1948 amounted to $2,623,000. Included were: The 30-mg. reinforced-concrete Northeast filtered-water reservoir; the 160-mgd. peak-load booster station with four 175-ft. head pumps; and two large feeder mains at East Eight Mile Road. The feeder-main projects consisted of a 66-in. steel-cylinder, reinforced-concrete pressure pipe, 6,300 ft. long and a 48-in., 9,700-ft. long installation of the same type. Major work to be started in 1949 is: The $1,500,000 first section of the Northeast raw-water conduit consisting of 6,000 ft. of 10-ft. dia. monolithic concrete-lined tunnel; a $250,000 pre-chlorination station with a maximum capacity of 22,500 lb. per day of liquid chlorine; 5,300 ft. each of 60 and 54-in. feeder mains at a total cost of $750,000; and $400,000 in new distribution mains. Plans are being prepared for the 180-mgd. Northeast treatment station that is estimated to cost $21,000,000.

NEW ORLEANS, LA.—At a total of about $1,414,000, 52,780-ft. of new water mains were added to the distribution system, 2,400-ft. and 3,400 ft. of 30-and 24-in. cast-iron pipe, respectively, were installed in the business section to improve pressures, and 13,150 ft. of 50-in. steel pipe were purchased in 1948. The steel pipe will be lined with concrete mortar and installed as the first section of a 50,000-ft. cross-town main.

DISTRICT OF COLUMBIA — The Corps of Engineers plans to start work this fall on a new $3,000,000 Del Carlia pumping station, which will have 16 vertical pumps of from 10 to 100 mgd. capacity. The 250-mgd. high-lift station will serve all five different pressure zones within the District, and is part of a $45,000,000 modernization program. The District itself will take bids soon for its 290-mgd. Bryant St. pumping station. Pumps for the $2,500,000 installation have already been ordered.

TRANSPORTATION

NEW HAMPSHIRE TURNPIKE—Following the lead of Maine, New Hampshire last year placed this 15-mi. 4-lane road under construction, at a contract price of $5,251,024. The route continues southward parallel to the coast from the lower terminus of the Portland-to-Portsmouth (N. H.) Maine Turnpike, to the Massachusetts line. Ten percent of the work was done by Jan. 1 this year, and completion is scheduled for July 1, 1950.

MYSTIC RIVER BRIDGE—Local and coastwise vehicular traffic will move faster in Boston next year when the $27,000,000 Mystic River Bridge, between the city's Charlestown section and Chelsea, is opened. Now 25 percent complete, the bridge will carry two three-lane decks on most of its 2-mile length. A 1,524-ft. cantilever bridge, the project's biggest element, will have an 800-ft. central span 140 ft. above the water.

EAST BOSTON EXPRESSWAY—Another heavily-traveled route, from downtown Boston northeastward through the Sumner tunnel to East Boston, Logan Airport and northern shore points, will carry more traffic upon completion of this $10,000,000 elevated roadway project in East Boston. The main work is 6,850 ft. long and a connecting ramp to the airport is 3,000 ft. long. The first contract, for more than $6,000,000, now is under way.

BOSTON BELT HIGHWAY—Almost four miles of the four-lane divided highway that eventually will loop around Boston, from Gloucester, 30 miles northeast, to Nantasket, 15 miles southeast, were put under construction in 1948, at a contract cost of $2,300,000. This work was one-third complete at the end of the year. Previously, since 1936, 14 miles had been completed. In addition, during the year, approach fill for an important link in the highway, the $4,700,000 bridge across the Annisquam river in Gloucester, was finished. Work began on the substructure, and the superstructure will be let this summer. The main arch span will be 420 ft. long, with its deck 95 ft. above water.

CONNECTICUT HIGHWAYS—New Haven's West Rock, most important obstacle remaining in the Merritt-Wilbur Cross system that connects New York with Boston, was pierced by two-lane bores during the year. The $1,935,000 job should be complete by June 1949. In addition, grading and drainage on seven more miles of the Wilbur Cross Parkway ($1,308,000)

CONCRETE PILES

...built to last under severe salt water exposure

COVERING an over-water area of ten acres, the new Norfolk and Western Railway merchandise pier at Lambert Point, Norfolk, Va., is supported by 5,406 concrete piles averaging 70 ft. in length. These piles had to be designed to withstand severe exposure and salt water action. This was accomplished by using a relatively rich mix (1:2½:3½ with 5½ gal. of water per sack of cement).

Designing durable concrete piles is another application of the well-defined and thoroughly-tested principles and procedures of quality concrete construction. These principles and procedures are the key to strong, enduring concrete that performs satisfactorily under any climatic, soil, water or service condition.

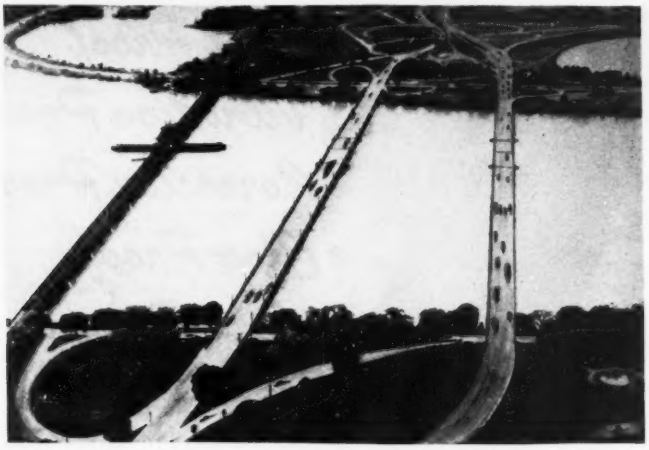
For complete details about quality concrete write for a 70-page book, "*Design and Control of Concrete Mixtures.*" If you'd like more information about concrete piles, send for 80-page illustrated book, "*Concrete Piles.*" Both are free but they are distributed only in the United States and Canada.

PORTLAND CEMENT ASSOCIATION

DEPT. A3c-17, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

CALIFORNIA FREEWAY. The Bayshore Freeway is one of the major developments in California Freeway construction program.



TWIN POTOMAC CROSSINGS. Sketch on aerial photograph (looking south to Virginia) of 14th St. bridge sites in Washington, D. C. shows how new northbound East Bridge and reconstructed southbound West Bridge will look when project is complete. For time being, old truss bridge on west site will continue in use.

were 90 percent complete at the end of the year, and one mile was paved. Six more miles will be paved this year. Eight new bridges were 30 percent complete. Five miles of 4-lane and eleven miles of 2-lane concrete pavement were built on the **Wilbur Cross Highway.**

BROOKLYN-BATTERY TUNNEL—This is another tunnel that will eliminate the bottleneck between existing express routes. The routes in this case are New York's **West Side Highway** and Brooklyn's **Belt Parkway** system. Connections to other routes, including the East River Drive, eventually will be made. $20,000,000 was spent or obligated during 1948 on the $82,000,000 tunnel project, now 80 percent complete, and $16,000,000 more will be committed in 1949. Each of the 9,117-ft. two-lane bores was holed-through during 1948. Operation is scheduled for the summer of 1950.

NEW YORK EXPRESSWAYS—In New York City, four contracts amounting to about $8,380,000 for 2.7 miles of the $20,000,000 **Van Wyck Expressway** between Jamaica and Idlewild Airport constituted the bulk of work on the city's expressway system. The most important project is a $2,530,000 three-year reconstruction of a grade separation in Jamaica, to provide more headroom and four more traffic lanes under 13 existing railroad tracks. **Brooklyn-Queens Expressway** contracts for $4,470,000 will furnish a mile and a half of miscellaneous road work, as well as the **Meeker Avenue Viaduct** superstructure. Little work was done on the $39,000,000 **Cross-Bronx Expressway**, but somewhat more than $1,000,000 was started on **Major Deegan Expressway**, also in the Bronx.

The foregoing are financed mostly by the state. The city completed its **West Side Elevated Highway** by putting the final 3,200 ft. at the southern end into service in November. A $4,380,000 contract for the work had begun in March 1947.

Outside the city, on Long Island, four miles will be added to **Northern State Parkway** by $2,310,000 in contracts let during 1948. And the state's biggest grade separation and railroad elevation project, .62 miles in **Rockville Centre**, went for $4,800,000 late in the year. In addition, $4,250,000 were obligated for ten miles of the 486-mile state **Thruway** that will run up the west side of the Hudson, to Albany, then westward through Buffalo and along Lake Erie to the Pennsylvania line.

NEW JERSEY HIGHWAYS—**Route 100 Freeway**, a new road from the George Washington Bridge to the Raritan River, advanced in 1948 as contractors brought in fill to reclaim land for the right of way. Land acquisition and grading proceeded on **Route 4 Parkway**, which ultimately will connect Paterson with Cape May. The state paved 25 miles of dual highway (filling several gaps in arterial routes), graded 2.7 miles of multiple highway and built 30 bridges during the year. $30,000,000 is scheduled to be obligated in 1949. Toll roads, perhaps

SPECIFY
STREAMLINE
TRADE MARK REG. U. S. PAT. OFFICE
COPPER PIPE AND FITTINGS
MUELLER BRASS CO.—PORT HURON, MICHIGAN—STREAMLINE MUELLER BRASS CO.—PORT HURON, MICH

- *Rust Proof*
- *Vibration Proof*
- *Corrosion Proof*
- *Clog Proof*
- *Leak Proof*

● When your plans call for pipe and fittings on new work, remodeling city projects or for water service lines, investigate STREAMLINE Copper Pipe and Solder Fittings before you decide.

STREAMLINE compares very favorably in cost with ferrous pipe, yet, with the exception of abnormal soil and water conditions, it never has to be replaced due to rust or clogging. The pipe joint is actually the strongest point in the line—constant vibration, resettlement of the fill, etc. has no effect upon it.

STREAMLINE Service Pipe (Type K) is the original copper service pipe, and the first to be produced in America for water service work. It is the most uniformly soft and pliable pipe possible to obtain—it is kept that way through the use of the best copper obtainable for the purpose and through strict laboratory control through every phase of its manufacture.

STREAMLINE Fittings and Type K Copper Pipe are the ideal materials for water works use; for many applications in filtration plants; in aeration lines and in heating coils using the sludge digestion system in sewage disposal plants—and for all general plumbing and heating purposes.

Water works officials who are responsible for the return on a very heavy capital investment have in STREAMLINE fittings and copper pipe, one of the most effective and low cost forms of insurance that they can adopt. It is the ideal material for water service work. Include them in your specifications for post-war planning.

COPPER PIPE PLUS BRONZE SOLDER FITTINGS PRODUCE THE MOST PRACTICAL PIPE-JOINT

STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

engineered by consultants, were authorized by the legislature, and it is possible the **Route 300 Freeway,** connecting Route 100 with the New Delaware River bridge below Wilmington, will be built under this authorization.

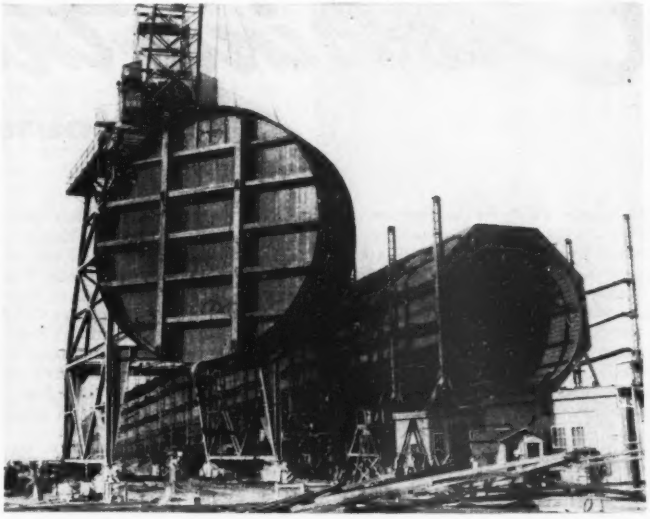
DELAWARE BRIDGE – Estimated at $35,000,000, this new memorial bridge will replace the Newcastle-Pennsville ferry below Wilmington. It will be a four-lane structure with a main suspension span of 2,150 ft., 175 ft. above the water. Initial work, represented by $16,000,000 in contracts for all foundation work between abutments, began last Summer. The $13,700,000 superstructure contract was let early in 1949, and completion of the entire project is expected by June 1, 1951.

BALTIMORE-WASHINGTON EXPRESSWAY–Although a fast highway extends from the **Delaware Memorial Bridge** site to Baltimore, the 30 miles beyond the Nation's capital remain inadequate. However, the federal government already has improved part of the road, and on twelve miles the state of Maryland now is building a limited-access road, paved four or six lanes on a 300-ft. right-of-way. The project includes bridges at two streams and a railroad, six road grade separations and an interchange for a half-mile airport service road, also part of the work. $4,750,000 of the project's estimated $14,300,000 cost was obligated by the state in 1948 and the remainder will be contracted this year. One percent completion was estimated at the end of December, 1948.

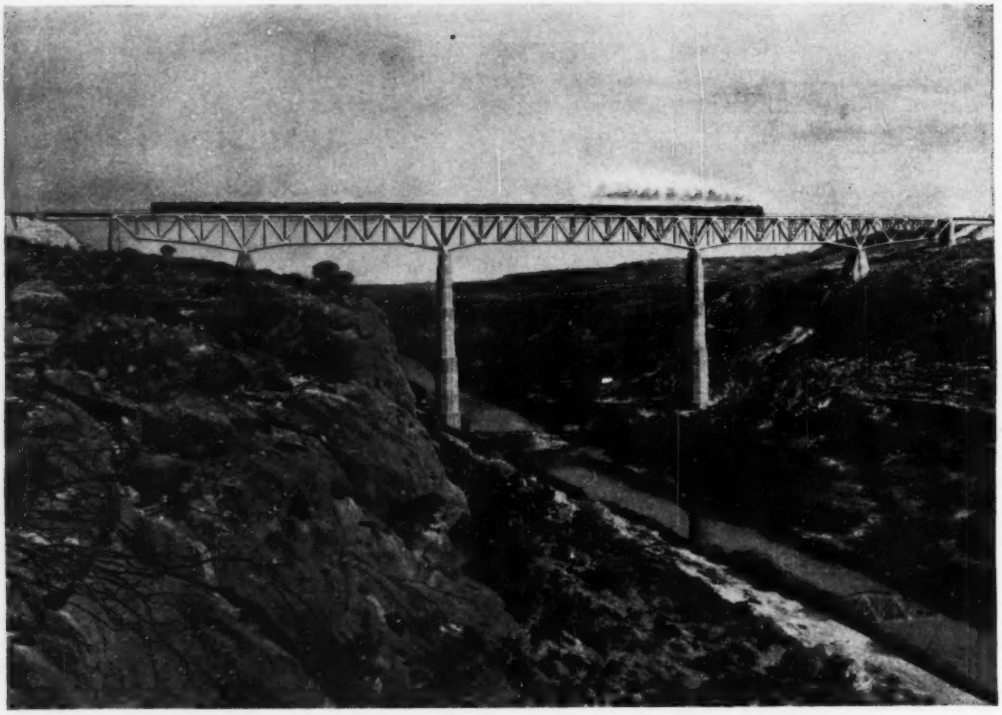
DISTRICT OF COLUMBIA–A vital link in coastwise travel, the $5,800,000 **East Bridge** across the Potomac River next to the old 14th St. Bridge will be placed in service in November. The new bridge, with its bascule channel span, will carry four lanes northbound and the old will carry southbound traffic. Later, the old bridge will be torn down and replaced. Elsewhere in the capital, the new $5,400,000 **Victory Bridge** across the Anacostia River also will be complete in November. A swing span will provide two 150-ft.-wide passages for shipping. **Whitehurst Freeway,** the $3,350,000 K Street elevated approach to Key Bridge will be complete in May, and the $3,800,000 **DuPont Circle Underpass** will be put in service in December.

SHIRLEY HIGHWAY – One more traffic-choked city, Alexandria, Va., will be bypassed by Atlantic Coast

AIR FOR BROOKLYN-BATTERY TUNNEL. Man-made island at lower right is top of Governors Island shaft, half way between Brooklyn and Manhattan. Blowers handling nearly 4,000,000 cfm. will be built here, to ventilate half of the tunnel. (New York Herald-Tribune photo.)



HOUSTON TUNNEL SECTION. Shipyard crane moves bulkhead to place on tunnel section prior to test for water tightness and launching for sea journey from Pascagoula, Miss. to Houston Ship Channel tunnel site.



Crossing the Pecos

IN SOUTHWESTERN TEXAS

As breath-taking as the rugged country in which it stands, the Pecos River Bridge is one of the highest and most-talked-of railroad bridges ever constructed. It was awarded the American Institute of Steel Construction's annual prize for 1944 as the most beautiful railroad bridge in the United States. The structure carries Southern Pacific's mainline transcontinental traffic across the 330-ft-deep Pecos Canyon. It is a modern continuous-cantilever truss span, with a single plate-girder approach span at each end, its tremendous weight being borne by six piers and abutments of heavily reinforced concrete. It is 1390 ft long, and its two center piers, extending to the floor of the canyon, are 265 ft above normal water level. Into its huge substructure was poured 15,455 tons of concrete.

The huge superstructure of the Pecos River Bridge, weighing some 2700 tons, was fabricated and erected by Bethlehem.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation

FABRICATED STEEL CONSTRUCTION

BETHLEHEM STEEL

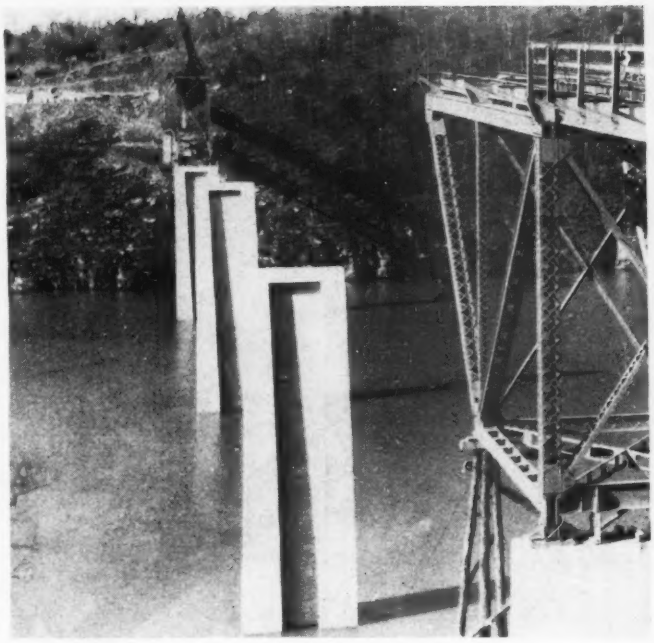
traffic when this 17.3-mile expressway is put into service (part of it two-lane) late this year. Obligations amounting to $500,000 were made in 1948, bringing the total to $5,000,000. Finishing the four-lane work, to cost $1,000,000, will take place in 1950 or later.

BLUE RIDGE PARKWAY—During 1948, expenditures amounted to $1,500,000 on this 476-mile two-lane route extending into North Carolina from the Skyline Drive in Virginia. Addition of eight miles of grading and 2 miles of paving brought the construction status to 245 miles paved, 77 miles with crushed stone base and 6 miles graded only, with 23 miles of paving and 8 miles of grading to be completed under existing contracts. About $1,800,000 will be spent in 1949.

PENNSYLVANIA TURNPIKE — Long-planned eastward extension of the Pennsylvania Turnpike to the vicinity of Philadelphia got under way in September. By January $2,971,000 had been obligated on this 90-mile job, and $44,000,000 will be committed this year. Seventy-seven percent completion is scheduled for the year-end, and the route should be open for traffic in the fall of 1950.

PENN-LINCOLN PARKWAY — Over $20,000,000 worth of construction contracts have been awarded to date on the Penn-Lincoln Parkway in Pittsburgh, Pa. Of this amount, $15,550,000 was awarded last year. Eleven bridges were completed during the year, and another will be finished soon. **Squirrel Hill Tunnel**, carrying two traffic lanes in each of its twin tubes, was started last summer, while the $1,800,000 three-arch **Commercial Avenue Bridge** was more than half completed at the end of the year. Scheduled for contract letting this year is the **Frazier Street Bridge**—a five-span deck truss bridge to carry the parkway over railroad tracks and three existing streets.

CLEVELAND FREEWAYS — Current contracts for $5,802,000 worth of construction on 3.5 mi. of the north-south **Willow Freeway** will be completed this year, and contracts will be awarded for an additional 0.8 mi. of work, to cost $1,200,000. Right-of-way costs for the 4.3 mi. of freeway will total about $3,050,000. Contracts totaling $800,000 for 3.1 mi. of concrete paving on the north-eastward **Lakeland Freeway**, and $1,448,000 for a grade-interchange structure were awarded late last year, for completion in 1949. This year, contracts will be awarded for 1.0 mi. of additional construction on the freeway at an estimated cost of $4,000,000.



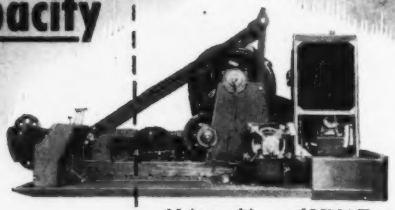
CANEY FORK BRIDGE. Functional simplicity is characterized by the straight lines of 215-ft. piers completed last year for the Corps of Engineers' 1,787-ft. Caney Fork River bridge which will carry Tennessee State Highway 56 above water impounded by Center Hill Dam. Superstructure contains two cantilever trusses with 387-ft. anchor span and 148-ft. cantilever arms, and two 235-ft. suspended spans.

DETROIT EXPRESSWAYS — Construction on the **Edsel Ford Expressway**, which joins the **Willow Run-Detroit Industrial Expressway** and will extend easterly across the city was advanced last year—contracts totaling $1,540,000 were completed and $2,807,000 worth of work was placed under contract. An estimated $5,249,000 worth of work is expected to be put under contract this year. Construction contracts completed last year on the north-south **John C. Lodge Expressway** totaled $2,225,700, while $859,800 worth of work was placed under contract. An estimated $3,666,000 worth of construction is expected to be placed under contract before the end of this year.

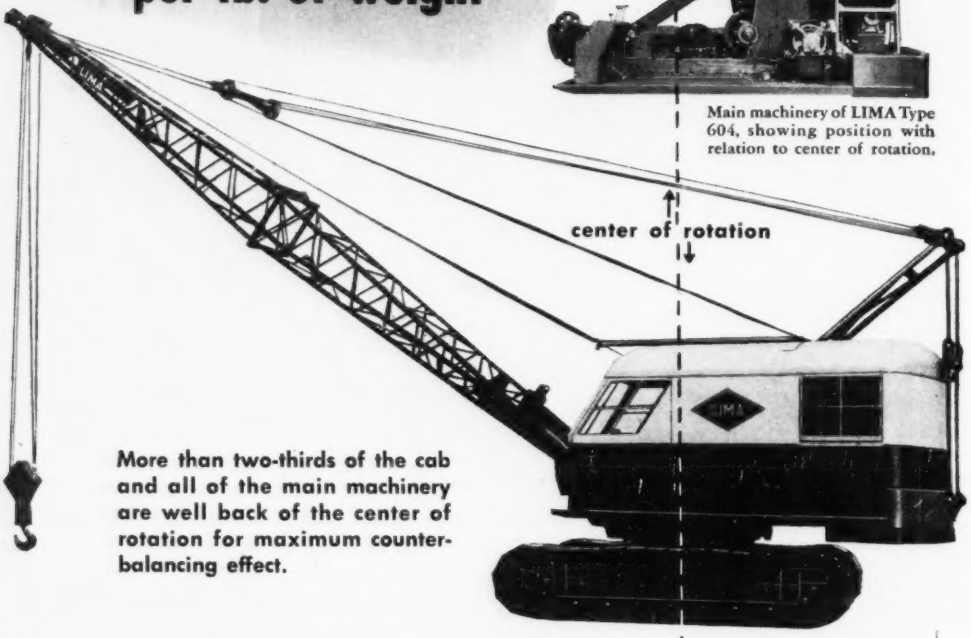
PEORIA BRIDGE—The $2,160,000 Harvard St. Bridge over the Illinois River at Peoria, Ill., was completed in December by the Illinois Division of Highways. Construction of the high-level, 4,695-ft. structure was started

DENVER FREEWAY WORK. Dragline backfills a 72-in. sewer under the proposed location of the Denver (Colorado) Valley Highway.

Why the LIMA Type 604 develops the greatest capacity per lb. of weight



Main machinery of LIMA Type 604, showing position with relation to center of rotation.



More than two-thirds of the cab and all of the main machinery are well back of the center of rotation for maximum counter-balancing effect.

● The LIMA Type 604 shovel, crane and dragline is engineered to produce greatest capacity with minimum weight. This is achieved by placing as much weight as possible *behind* the center of rotation—eliminating the need for excessive counterweight. Hook rollers on which the machinery base revolves eliminate strain from the center pintle—permitting continuous, safe operation at full capacity.

The simple, compact design of the main machinery, using the fewest number of shafts to accomplish the various operations, further contributes to efficient, trouble-free service.

These are only a few of the features which make the LIMA 604 a favorite with owners and operators. The Lima Line includes shovels ¾ to 6 yards, Cranes 13 to 110 tons and Draglines variable.

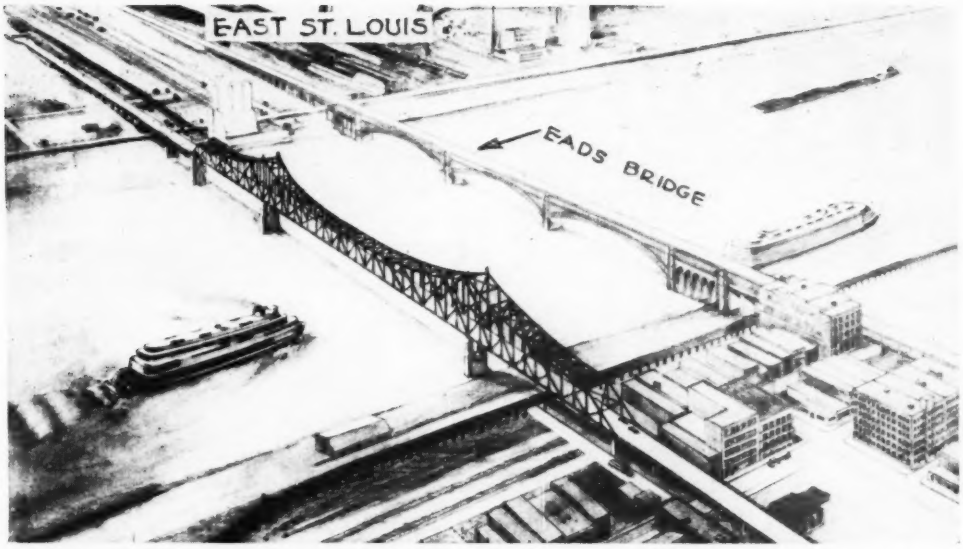
It will pay you to consult your nearest Lima Sales Office or representative before you buy your next shovel, crane or dragline. Offices in principal U.S. cities.

Lima Shovel and Crane Division

LIMA, OHIO

LIMA HAMILTON CORPORATION

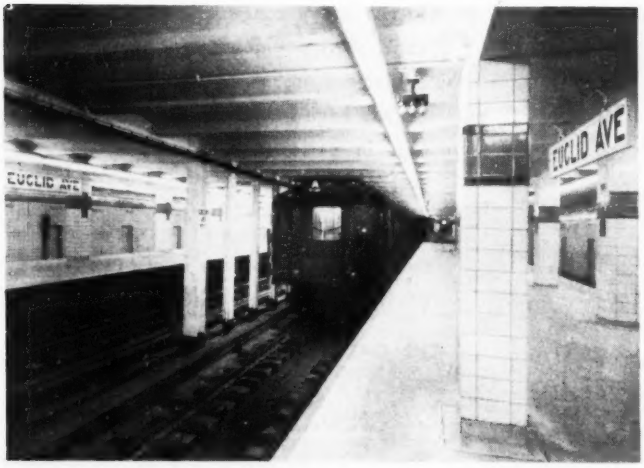
OTHER DIVISIONS: *Lima Locomotive Works Division; Niles Tool Works Co.; Hooven, Owens, Rentschler Co.*



MISSISSIPPI BRIDGE. Construction began last summer on this new cantilever structure across the Mississippi River, upstream from historic Eads Bridge between St. Louis and East St. Louis.

in 1940 but was suspended during the war. The 536-ft. main span gives a 66-ft. vertical clearance over the navigation channel, and is flanked by 469-ft. side spans to make a three-span continuous through truss.

MINNESOTA BRIDGES—An 1,825-ft. **Mississippi River bridge** with 32-ft. roadway is under construction at Hastings to replace an inadequate span with a dangerous spiral approach. Late last year contracts were let for the north abutment and eight piers ($440,000) and steel superstructure ($1,040,000). The main span is a continuous tied steel arch with 514-ft. center and 225-ft.. side spans. The concrete approach and decking will be let this year, for project completion in 1950. Minnesota, jointly with Wisconsin, will begin work this year on a $4,000,000 project for a 2,310-ft. through truss bridge over the **St. Croix River.**



NEW SUBWAY STATION. New York subway work in 1948 included completion of the Fulton St. extension in Brooklyn.

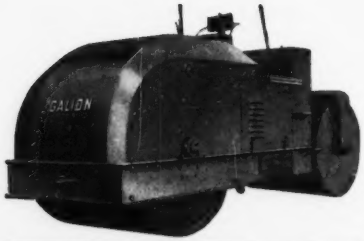
EAST ST. LOUIS BRIDGE—The construction of the new toll bridge over the Mississippi River just upstream from Eads Bridge was started by the city of East St. Louis, Ill., in the summer of 1948 under a $6,490,000 contract. The four-lane structure has a total length of 7,620 ft., including a 1,904-ft. cantilever span (a 964-ft. channel span plus two 470-ft. anchors). East side approach piers already have been completed and erection of 8,100 tons of superstructure steel will start this spring. An accelerated progress schedule envisions completion of the bridge in August, 1950.

NEW ORLEANS TUNNEL—The City of New Orleans plans to begin work this year on the $8,500,000 St. Claude Ave. tunnel. The facility will carry pedestrian and four-lane vehicular traffic beneath the forebay of the St. Claude Ave. lock of the industrial Canal connecting the Mississippi River and Lake Ponchartrain. Length between portals of the tunnel will be 1,800 ft.

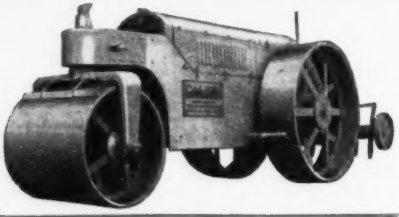
MISSOURI EXPRESSWAYS—A $1,700,000 contract was recently awarded for a 2,950-ft. six-lane divided viaduct—the first work on the **Kansas City Southwest Trafficway,** itself the first Missouri expressway project under the urban program. The viaduct will span the Kansas City Terminal Railroad and all cross streets from 20th to 25th

GALION

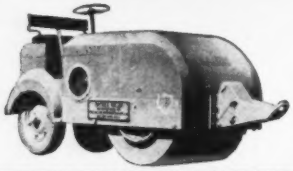
-an Old Name that Stands for the Newest and Best in ROLLERS and GRADERS



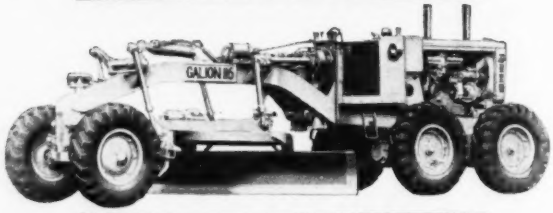
TANDEM ROLLERS, Four Sizes—variable in weight from 3 to 14 tons.



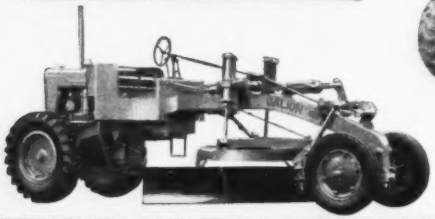
THREE-WHEEL ROLLERS, Five sizes—6, 7, 8, 10 and 12 tons.



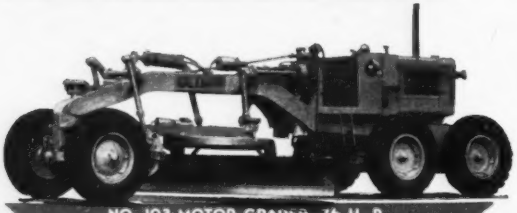
PORTABLE ROLLERS for Patching and Odd Jobs.



NO. 116 MOTOR GRADER, 100 H. P. for Extra Heavy-Duty Service.



NO. 402 MOTOR GRADER, 31 H. P. for economical Maintenance Work.



NO. 103 MOTOR GRADER, 76 H. P. for Heavy-Duty Service

In the heavy construction field -- among contractors, engineers, and users who know equipment best -- GALION Graders and Rollers have long been regarded as being tops in performance, dependability, and profitable service.

Write for literature on the type of equipment in which you are interested -- and the name of nearest Distributor.

THE GALION IRON WORKS & MFG. CO.
General and Export Offices
Galion, Ohio, U. S. A.
Cable Address: GALIONIRON, Galion, Ohio

GALION Estab. 1907

GRADERS · ROLLERS

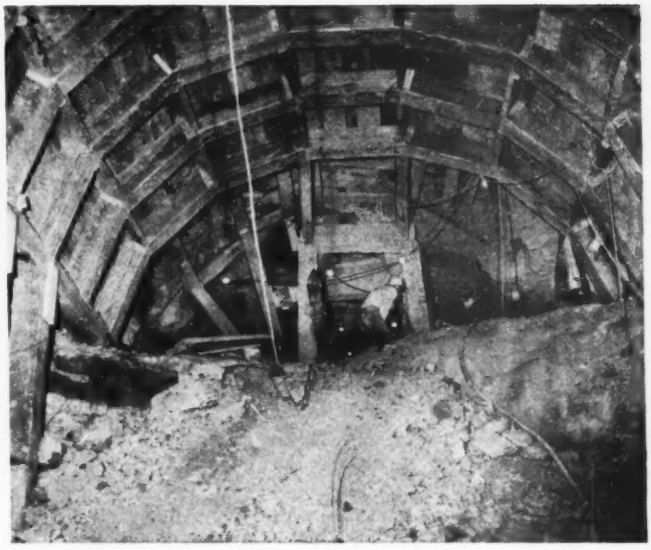
St. The state also hopes to contract this year for a portion of a depressed expressway in **St. Louis.** Estimated project cost is $2,500,000, including right-of-way.

TEXAS EXPRESSWAYS—Over $24,000,000 has been spent on Texas' major urban expressway program, aimed at 1951 completion, and $7,000,000 is earmarked for 1949 contracts. In general, the expressways are divided roadways of four, six or eight lanes, flanked by two-lane service streets. At **Dallas,** the $18,000,000 **Central Boulevard Expressway** is under construction to shorten by 1.3 mi. and 22 min. the north-south travel time through the city on U. S. Route 75. Through 2 mi. of downtown Dallas, the highway will utilize two widened existing streets pending construction of an elevated connection between the north 3.6-mi. and south 2.7 mi. sections. Also on U. S. 75 is an urban expressway fringing the **Houston** business district. Sections of the project, leading southeast toward Galveston, have already been completed under a $5,250,000 contract. At **Ft. Worth,** work is in progress under a program for two expressways that will cross the city from north to south and east to west, while two similar projects are planned for **San Antonio.** Much of the 12 mi. through the city will be depressed.

HOUSTON TUNNEL—The first of four 375-ft. long 32-ft. dia. prefabricated steel tube sections for the $7,500,000 Pasadena vehicular tunnel beneath the Houston, Texas Ship Channel has been delivered. A second tube has been launched; the others will be delivered this spring. Work is well along on 1,450 ft. of cut and cover concrete approach tunnel and 850 ft. of open ramp on the 3,900-ft. project, which is expected to be open to traffic by the end of the current year.

GALVESTON TUNNEL—Negotiations for completion of financing are well advanced and bids have been taken for construction of a $17,000,000 toll tunnel across the entrance to Galveston Bay, in Texas. First work on the project is scheduled for this spring. A feature of the 3¼-mi. project will be construction of a 1,200 x 200-ft. artificial island for a transition between a ¾-mi. concrete trestle and mile long tunnel.

DENVER VALLEY HIGHWAY—Under a $2,225,000 contract, work has begun on the first 2¼ mi. of a $25,000,000 expressway along the South Platte River to carry north-south traffic around Denver's main business district. The limited access highway will have two 2-lane roadways separated by a wide median strip on which two additional lanes will be built later. Eleven major traffic interchanges are planned, as well as a crossing over the South Platte.



WESTERN TUNNEL. Top drift of Aspen tunnel, part of a relocation project that will complete the Union Pacific double track from Omaha to Ogden.

ALASKAN WAY VIADUCT—Construction will start in April or May on this $6,300,000 double-deck expressway in Seattle, Wash. The viaduct will carry traffic through the downtown section, which is situated on a relatively narrow neck of land between the industrial (south) and residential (north) parts of the city. The project will include 4,550 ft. of double-deck structure and have a total length (including ramps) of 7,600 ft. Each deck will be 40 ft. wide and carry 3 lanes of one-way traffic.

TACOMA NARROWS—After a brief delay to arrange additional financing, a contract was let early in 1948 for rebuilding the Tacoma Narrows Bridge. First steel for the towers of the $14,000,000 bridge was raised in January, 1949. Completion is set at July 1, 1950. During 1948 the old piers were recapped.

COLUMBIA RIVER HIGHWAY—Final contracts for grade separations and pavement will be let in 1949 for the 18½-mile relocation of the Columbia River Highway through the Columbia River gorge east of Portland, Ore. Total construction cost of the project will be $6,650,000. A 5.35-mile extension is contemplated, estimated by engineers at another $1,035,000.

HARBOR DRIVE EXPRESSWAY—Work on the entire 3.36 miles of this six-lane arterial for Portland, Ore., will be contracted for by the end of 1949. Already under way are $3,850,000 of contracts. Contracts for 0.83 miles of roadway and two articulated traffic interchanges, estimated to total $1,500,000, are to be let.

CALIFORNIA BRIDGES — More than $17,000,000 each year is being spent on highway bridges in California. Much of the work is on interchange structures on freeways but several other major structures were under contract in 1948, including the **Moyo River Bridge** ($760,000), **Weitchpec Bridge** across the Klamath River ($610,000), **Three Miles Slough** ($780,000), **Mossdale Bridge** across the San Joaquin River ($665,000) and major rail-highway grade separations in Sacramento ($825,000) and Roseville ($1,500,000).

SAN FRANCISCO CROSSINGS—Finishing up a year-long study, the Bay Toll Crossing Division of the

Stone & Webster Engineering Corporation, Engineers

Western solves cofferdam problem with reinforced Concrete Ring Wales

THE COFFERDAM ILLUSTRATED was erected in the Mississippi River preliminary to the construction of the Pump Well Building for the Circulating Water Intake at the Union Electric Power Company, Venice, Ill. This is the first time that concrete ring wales have been used in a large cofferdam in this country.

THE WALES, ACTING AS CONTINUOUS ARCHES, combine great strength and economy with many other advantages over the usual cross bracing and spiders. They are an adequate solution to many of the problems in this type of work. It was possible to use a floating hydraulic dredge inside the cofferdam for most of the excavation; the ability quickly to install and remove the construction equipment greatly facilitated the installation of the Drilled-In Caisson* foundations and pouring of the Pump Well Structure.

WESTERN HAS ESTABLISHED AN ENVIABLE RECORD supplying the right answer to every type of foundation problem since 1924. Although WESTERN usually drives one of its standard types of piles, where necessary a new variant may be created to solve your particular problem. Quick consultation afforded in any part of the country. Write for Catalog A.

FOUNDATIONS FOR

INDUSTRIAL PLANTS, POWER PLANTS, STEEL PLANTS, PIERS AND DOCKS, WAREHOUSES, BRIDGES, AIRPORTS, HOUSING PROJECTS, SCHOOLS, COMMERCIAL BUILDINGS, ETC.

BUTTON BOTTOM PILES • COMPOSITE PILES • PEDESTAL PILES • CAISSON PILES • PROJECTILE PILES
COMPRESSED CONCRETE PILES • DRILLED-IN CAISSONS • PRE-DESIGN AND PRE-CONSTRUCTION
FOUNDATION TEST PROGRAMS • SOIL BORINGS • PIPE AND H-BEAM PILES

*Patented.

WESTERN FOUNDATION CORPORATION

308 W. Washington St., Chicago 6, Ill. • 2 Park Avenue, New York 16, N. Y.

LA GUARDIA DIKE. Strategic sections of this dike around subsided portions of La Guardia Airport, New York, were completed in time to prevent inundation of the huge airfield by 1948 high autumn tides.

California Department of Public Works recommended immediate construction of a $155 million bridge paralleling the existing Bay Bridge. The Toll Bridge Authority is expected to decide soon whether to build the recommended bridge or a low-level crossing between San Francisco and Alameda. If a parallel bridge is chosen, construction can start in 1950.

CALIFORNIA FREEWAYS – Further sections of the **Santa Ana Parkway** in the southern part of the state and the **Bayshore Freeway** in the north were open for traffic in 1948. Contracts for major freeways in effect at the end of the year total as follows: Hollywood–$8,076,800, Santa Ana–$3,064,800, Bayshore – $3,141,700, and Eastshore–$5,638,600. Still to be obligated this fiscal year is $1,274,000. Budgeted for freeway construction for the fiscal year starting July 1 is $15,000,000 in the Los Angeles area and $8,000,000 in the Bay region.

BOSTON SUBWAYS – Expenditure of $2,250,000 in 1948 brought to $3,000,000 the amount spent since mid-1947 on a 2.1-mi. extension of rapid transit facilities in East Boston. The terminus of present work is the Orient Heights station of the defunct Revere Beach and Lynn Railroad. The project includes 2,000 ft. of subway, 1,180 ft. of ramp and the remainder at grade. One station will be at the edge of Logan Airport. Expected completion date is Dec. 31, 1950.

NEW YORK SUBWAYS–One extension was completed and another was well along, on New York's Independent subway at the end of 1948. The **Fulton St. Extension** in Brooklyn, for which the structure had been built in previous years was equipped for operation at a cost of $8,000,000, under contracts begun in 1946 and 1947. A $5,533,000 contract for ½ mile of 4- and 6-track structure on **Hillside Avenue, Queens**, begun in November 1946, was 70 percent along in December. Completion of the contract is expected in October of this year. The other major program, $13,000,000 of platform extensions at 32 Interborough stations, was 98 percent complete. Work began early in 1947 on this project, which will increase the capacity of local stations from 5- to 10-car trains.

NORFOLK AND WESTERN RY. –Railroad bottlenecks also are being eliminated here by tunnel construction. The Norfolk and Western Ry., for instance, is building a 7,000-ft. double track tunnel near Bluefield, W. Va. This is part of a 5¼-mile relocation that will replace a single-track tunnel and reduce the eastbound grade to 1.4 percent. Relocation cost is $11,500,000. Work started Jan. 1, 1948, was 27 percent complete at the end of the year, and will be finished in mid-1950.

CHICAGO SUBWAYS – Tunneling under a $8,235,000 contract for the southern section of the **Milwaukee Ave.-Dearborn Ave.-Congress St.** subway is now completed, including twin tubes beneath the South Branch of the Chicago River at Congress St. in anticipation of future westward extension of the line. Tunnel lining is in place. Final work under this contract is scheduled for summer completion. Installation of track, contact rail and duct banks is more than 50 percent complete under a $1,188,000 contract. The remainder of work will be undertaken this year.

MISSOURI PACIFIC RAILROAD –Extensive line and grade improvements between Bismark and Piedmont, Mo., will eliminate helper service now required on this stretch of the main line south from St. Louis. Curves are being reduced to 2 deg. maximum, from as much as 8 deg., and heavy grades up to 2.45 percent are being lowered to 1.25 percent compensated. Work at Tip Top Hill, now nearly complete, involved blasting and excavating 2,000,000 cu.yd. of hardpan from a 4,000 x 50 ft. cut, 150 ft. deep, with 1¼ to 1 side slopes. Similar work at Gads Hill is now underway. This $1,000,000 project will shorten the line by 2.3 mi. and eliminate 434 deg. of curvature.

UNION PACIFIC RAILROAD – Expected opening of a second tunnel at **Aspen, Wyo.**, late this year will complete the U.P.'s double track between **Omaha** and **Salt Lake City**. A pilot tunnel for the $8,000,000, 7,600-ft. bore was holed through in December. Among other major U.P. projects completed during 1948 were a $3,500,000, 40-track retarder yard and $750,000 freight station at **North Platte, Neb.**, and a million-dollar 21½-mi. new line from **Ft. Hall** to **Gay**, in

The Proof of Economy is in PERFORMANCE

Tell us how you use wire rope, and we shall be glad to help you select the correct size and construction for your particular needs.

With wire rope, as with various other equipment, many claims can be presented . . . but in the final analysis, it is the record of PERFORMANCE that determines the ultimate cost.

By actual *on-the-job* service — over a period of many years—Preformed "HERCULES" (Red-Strand) Wire Rope has consistently proved its value by this accurate yardstick of performance.

Yes, for easier handling, safe and economical results, you can depend on the Red-Strand as your wire rope guide. In "HERCULES" there is a "right rope" for every heavy duty job.

We Invite Your Inquiries

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

ESTABLISHED 1857

5909 KENNERLY AVENUE • ST. LOUIS 12, MISSOURI

NEW YORK 6 • CHICAGO 7 • HOUSTON 3 • DENVER 2
LOS ANGELES 21 • SAN FRANCISCO 7 • PORTLAND 9 • SEATTLE 4

Idaho. Scheduled for 1949 completion is a 2½-mi., $1,200,000 double-track to be installed near **Thayer Junction, Wyo.**

LIMESTONE AIR FORCE BASE—The first stage of this northern Maine facility for heavy bombers, started from scratch in April 1947, will be finished in June, at a cost of $18,000,000. Eighty percent progress was recorded at the end of 1948, and $14,300,000 was spent during the year. A 10,000-ft. bituminous runway, with taxiways and apron, was complete and a 340-ft. span reinforced concrete hangar was enclosed. Other construction includes a control building, barracks, railroad service and access roads for the base.

BOSTON AIRPORT—With four 7,000-ft. runways already built and in use at Logan International Airport, the Massachusetts Department of Public Works in 1948 turned its attention primarily to permanent buildings. Work began on a $4,250,000 terminal building near the field's center, and on a $1,036,000 heating plant at the edge, as well as several other facilities. About $12,000,000 was spent during the year.

NEW YORK AREA AIRPORTS—Airport construction by the Port of New York Authority, now operator of four major facilities in the New York area (LaGuardia and Idlewild in New York and Newark and Teterboro in New Jersey) took place primarily at Idlewild (New York International Airport.) Temporary terminal facility construction, mostly expanded quonset huts, provided 105,000 sq.ft. of floor space; an 8,400-ft. concrete runway was built during the year, and a $4,500,000 federal building on the field's margin, begun in July, will be finished this year. At LaGuardia, a $1,500,000 marginal dike and sandpile job, to keep high tides from the field and to stabilize the peripheral fill, was started in August, for completion this spring. The airport continues to operate at full schedules while contractors carry on the stabilization work.

BALTIMORE AIRPORT—$12,000,000 of $14,000,000 has been obligated on the Friendship International Airport 9 miles south of the city's center. This amount includes the terminal building contract, on which work was started just before the year-end, for early 1950 completion. Three runways, one paved 9,450 ft. and two paved 6,500 ft., are 95 percent complete.

LARGEST OFFICE BUILDING in Los Angeles, the air-conditioned General Petroleum Building is 13 stories high.

BUILDING AND HOUSING

AMERICAN ENKA CO.—Production started in June in the $20,000,000 rayon tire yarn factory at Lowland, Tenn. Of steel and brick construction, with a precast concrete roof, the plant contains more than 500,000 sq. ft. of floor and extensive heating, ventilating and air-conditioning installations.

BROOKHAVEN NATIONAL LABORATORY—Located at Upton, L. I., the nation's first peacetime atomic pile will be in operation late this spring. Other phases of the project, including the pile laboratory, a "hot" laboratory and a cyclotron building will be completed later this year.

BUREAU OF MINES—A $10,000,000 coal hydrogenation demonstration plant for producing synthetic liquid fuels from coal was virtually completed in 1948 at Louisiana, Mo. The plant is equipped to operate on any type of U. S. coal or lignite, and has a capacity of 200 to 300 bbl. of gasoline per day. Construction of another coal-to-oil demonstration plant at the same location was begun in 1948. This gas synthesis plant will operate on the oxygen gasification of coal and Fischer-Tropsch synthesis to produce gasoline, diesel fuel and chemicals. It is expected that the coal gasification portion of the plant will be in operation late this year.

CORN PRODUCTS REFINING CO.—Spring completion is predicted for the plant at Corpus Christi, Texas, which will house a new process for manufacturing starch, dextrose sugar

IT'S LOADED!

...with COST-SAVING USES

NELSON STUD WELDING
Speeds Fastening Operations, Improves Construction

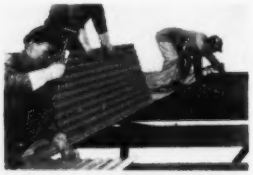
Whenever a material's to be fastened to steel, you can do the job *faster, better, at lower cost* with Nelson Stud Welding.

With the portable Nelson stud welding gun, all the work is done from one side, and in any position. This greatly speeds application, often eliminates costly job set-ups. Operators average 100 to 200 stud welds per hour.

RENT IT OR BUY IT—Complete Nelson Stud Welding equipment may be rented for only $45 a month. Now even the smallest contractor can obtain the benefits of this better method of fastening. Rent it—try it—and you'll want to buy it!

If your work calls for the fastening of any type of material to metal, it will pay you to investigate Nelson Stud Welding.

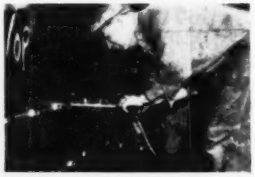
Mail the coupon today for detailed information. If you need the equipment immediately—phone or wire.



ROOFING AND SIDING—Working entirely from the top side, corrugated iron or aluminum sheets, protected metal and corrugated asbestos are quickly installed, at substantially less cost, by the Nelson Method. No inside scaffolding or rigging required.

ELECTRICAL, PIPING AND SPRINKLER INSTALLATION—Trigger-quick stud welding replaces costly drilling, bolting or clamping operations in securing conduit, wireways, outlet boxes, switch-gear. Contractors also find it ideal for piping and sprinkler installations.

INSULATIONS—There are Nelson studs and proven application methods for securing any type of insulating material—boards, blocks, sheet types, blanket types, etc.—quickly and at low cost.



WIRE MESH REINFORCEMENT—Users report that wire mesh reinforcement for protective cement coatings is secured by the Nelson Method in less than half the time required by any other method.

GET ALL THE FACTS NOW!

NELSON STUD WELDING
Division of Morton Gregory Corporation
2750 Toledo Avenue, Lorain, Ohio

Send complete information about Nelson Stud Welding for the following materials:

- ☐ Corrugated iron, aluminum and protected metal roofing and siding.
- ☐ Corrugated asbestos roofing and siding.
- ☐ Sprinkler and piping systems.
- ☐ Insulations
- ☐ Conduit and wireways.
- ☐ Wire Mesh
- ☐ Send details about the Rental Plan.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

NELSON STUD WELDING

Division of Morton Gregory Corporation

2750 Toledo Avenue, Lorain, Ohio

NELWELD

ALUMINUM COMPANY OF AMERICA MILL at Davenport, Iowa, for rolling aluminum sheet and plate, which has nearly 50 acres under one roof, is almost entirely inclosed in aluminum.

and high-protein cattle feed from milo maize. Grain elevators with a storage capacity of 2,000,000 bu. have been completed. Open-type construction is used extensively in the processing buildings.

E. I. DU PONT DE NEMOURS & CO.—The birthplace of nylon and neoprene—the experimental station near Wilmington, Del.—is undergoing a $30,000,000 expansion, which is now about 10 percent completed. In addition to the enlargement of existing laboratories, 25 new service laboratory and semi-works buildings are being erected. In July, production started in the $20,000,000 nylon yarn factory near Chattanooga, Tenn.—the third of its type in the U. S. A feature of this plant is the use of precast insulated concrete panels for the exterior walls. Also completed during 1948 was the 17-building plastics plant at Parkersburg, W. Va.

GENERAL ELECTRIC CO.—The world's largest turbine plant—also the world's largest field-welded industrial building—will be completed this year at Schenectady, N. Y., at a cost of $30,000,000. The factory will be 650x1,290 ft. An attached 4-story air-conditioned office building will have exterior walls composed of cellular, insulated panels faced with stainless steel and backed with carbon steel. Start of construction on an experimental atomic power plant near West Milton, N. Y., and opening of the first wing of the $18,000,000 research laboratory near Schenectady, N. Y., were two highlights of research activities during the year. Others include placing of the jet engine testing lab in partial operation at the $25,000,000 jet research center at Lynn, Mass., and start of construction on a 5-story brick and steel electrical measurements laboratory with 142,00 sq. ft. of floor area, also at Lynn.

LINCOLN-MERCURY AUTOMOBILE ASSEMBLY PLANT at St. Louis, Mo., providing 850,000 sq. ft. of floor, is one of several large factories built by Ford Motor Co. Others are at Los Angeles, Metuchen, N. J., Canton, Ohio, and Mound Road, Detroit. (Albert Kahn Associated Architects and Engineers photo)

JOHNS-MANVILLE—The fourth building in the research center at Manville, N. J., is nearly completed. It is the Research and Administration Building—three stories high, with a four-story center section, and of steel and brick construction. It is 356 ft. long by 67 ft. 6 in. wide. Other structures at the center are the Product Development, Mechanical and Engineering Buildings.

THE PARAFFINE COMPANIES—Foundation work is under way for a linoleum factory on a 30-acre tract at Metuchen, N. J. Major unit in a

BUICK-OLDSMOBILE-PONTIAC ASSEMBLY PLANT at Framingham, Mass., which started production in Feb., 1948, houses nearly 20½ acres of manufacturing space under one vast roof.

THE AIR FORCE HANGAR at Limestone, Me., of thin-shell concrete, is the same size as the one at Rapid City, S. D., spanning 340 ft. with a 90-ft. clearance. These are the longest span concrete hangars in the U. S.

THE NAVY'S TEST HANGAR at the Air Test Center, Patuxent River, Md., houses facilities for testing electronic devices. Costing $2,000,000, it is of steel-arch construction, spanning 300 ft. with a 67-ft. 7-in. clearance and a length of 178 ft. Around the entire structure is ½-in. galvanized wire mesh to shield against electric disturbances.

$20,000,000 expansion program, the plant will include a 752-ft. long, steel-frame, protected-metal inclosed warehouse; printing building; power plant; paint factory; festoons, roll storage, mill, oxidizing unit, figuring and scratch buildings; racks, offices, varnish plant and stock-preparation building. Completion is expected in 1950.

PORT OF NEW YORK—During 1948, the Port Authority spent more than $12,000,000 on construction in the New York-New Jersey Port District. Among the larger projects under way are: The $8,100,000 Newark Motor Truck Terminal, 200 x 1,150 ft., for which foundations and steel work are finished; $9,300,000 New York Motor Truck Terminal, 160 x 1,000 ft., which is one-third completed; and the $20,000,000 Bus Terminal in midtown Manhattan, 200 x 800 ft., steel frame, four stories high, for which excavation is under way. Contracts were let in Feb. 1949, for the $4,212,865 twin, steel-arch hangars of 300-ft. span at the New York International Airport.

RAPID CITY AIR BASE—The final roof pour for one of the world's largest long-span, thin-shell concrete hangars is scheduled for April. Completion date for the $1,600,000 structure at the U. S. Air Forces base in South Dakota is set for June 1. Capable of simultaneously servicing two B-36's or six B-29's, the hangar is 314 ft. long, 95 ft. high. A thin-shell concrete arch roof (5in. at crown; 7 in. at springing) gives a 340-ft. clear span, with rigidity provided by external 20-in. x 5-ft. arch ribs on 25-ft. centers.

THE TEXAS COMPANY—Completion by July is expected for the refinery at Westville, N. J. Having a design capacity rating of 40,000 bbl. per day of crude, the plant includes an atmospheric crude topping and vacuum pipe, still, fluid catalytic cracking unit, thermal reformer, catalytic polymerization unit and auxiliaries. Extension of lube oil manufacturing facilities at Port Arthur, Texas, will increase capacity by 37,500 bbl. per day of crude and 2,500 bbl. per day of finished lube oils.

WESTERN ELECTRIC CO.—Started in June, the 1,200,000-sq. ft., steel-frame factory at Indianapolis for manufacture of telephone equipment will be completed in 1951. Among the other large plants the company had under way, a 425,000-sq.ft. electronics factory at Allentown, Pa., was

OWEN
The Universally Popular BUCKETS

TYPE "D"
HEAVY DUTY BUCKETS

For severe service in excavating and dredging hard materials. Heavier and more rugged than Type "M" with longer and larger lower arm bearings. Sealed from grit.

Type "DX"

Still heavier than "D" with extra large shafts and bearings. For dredging and the severest kinds of excavating.

TYPE "M"
GENERAL PURPOSE BUCKET

Primarily for excavating but efficient in handling compact materials, large crushed rock, etc. Overloads in loose materials.

Narrow buckets available for trench and cramped excavating.

TYPE "K"
STANDARD BUCKETS

For rehandling bulk material. Light but strong. Can be equipped with counterweight jackets, also bottom teeth for certain kinds of digging.

Light and Extra Light Type "K"

Built lighter for greater capacity in materials which do not require the weights of the Standard Type "K" for penetration.

GRAPPLES

of various designs are available for handling stone, scrap iron and pulpwood.

TYPE "S" BUCKETS

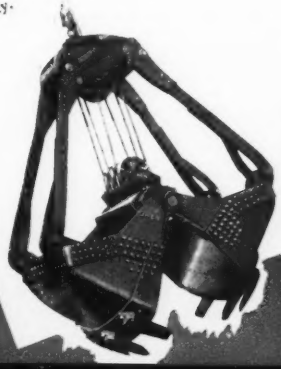
Wider and heavier than corresponding sizes of "K" Buckets. For unloading barges, flat cars, stock pile work, etc. Good for "clean up".

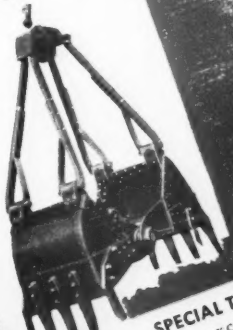
Light Type "S" Rehandling Buckets

Lighter than Standard "S" Buckets but designed to have equal strength and durability.

ROUND NOSE CONSTRUCTION

is available on "M", "D" and "DX". Heavy curved lip gives a surface that penetrates more readily and withstands shocks and strains that would bend the lip of a conventional bucket. Strains and impacts are distributed over the entire heavy and continuous lip.





SPECIAL TEETH

for trench excavation and straight down digging with vertical and parallel walls are available for "M" and "D" Buckets.

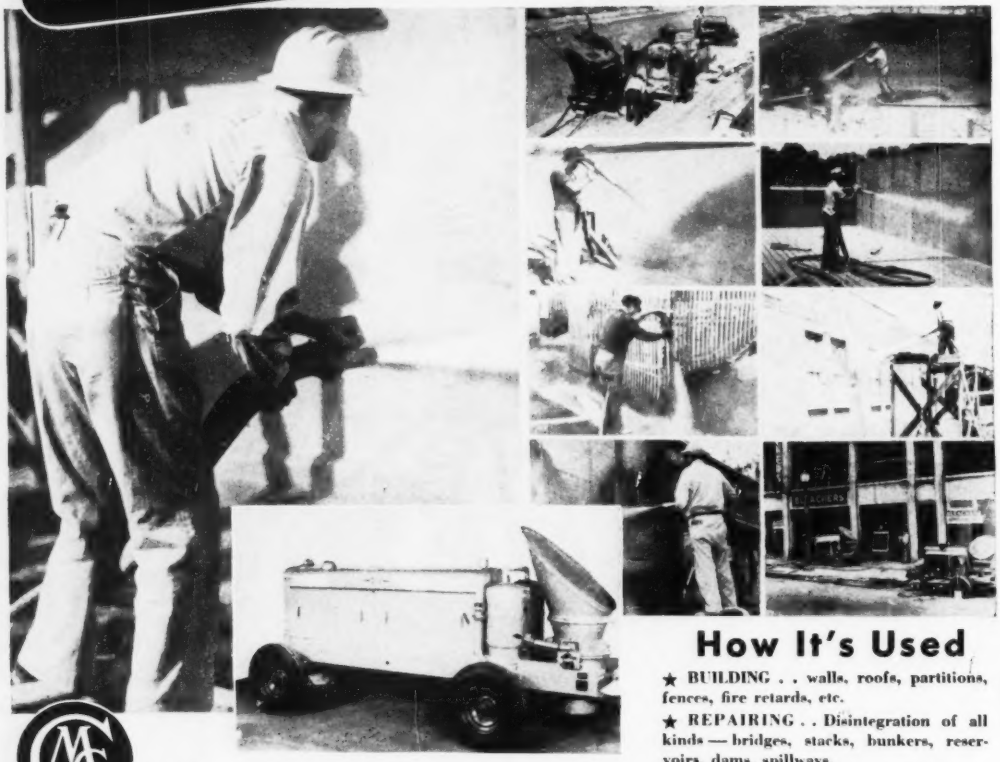
THE
OWEN BUCKET COMPANY
6010 BREAKWATER AVE.
CLEVELAND 2, OHIO

BRANCHES:
New York, Philadelphia,
Chicago, Berkeley, Calif.

CONSTRUCTION MACHINERY COMPANIES
WATERLOO, IOWA

CMC JETCRETE GUN

The Machine of A Thousand Uses



"Welding with Concrete" best describes the new CMC JETCRETE method of pneumatically applying concrete. JETCRETE is the most nearly perfect concrete known today. Wherever and whenever used, JETCRETE has done the job better, faster—and at low cost! The machine with a thousand uses!

Write today for Bulletin No. J6-348 showing JETCRETE in action.

How It's Used

★ BUILDING . . walls, roofs, partitions, fences, fire retards, etc.
★ REPAIRING . . Disintegration of all kinds — bridges, stacks, bunkers, reservoirs, dams, spillways.
★ RENOVATING . . old buildings . . . barns, houses, stores, industrial plants.
★ WATERPROOFING . . Reservoirs, tunnels, tanks, drains, fissures, water basins.
★ FIREPROOFING . . Wood, structural steel . . . buildings and mines.
★ RECLAIMING . . Stacks, reservoirs, storage tanks, grain bins, structures.
★ RECOATING . . Old buildings . . . masonry, brick, tile, concrete, stucco.
★ INSULATING . . Cold storage plants, oil reservoirs, tanks, warehouses.
★ LINING . . Water and oil reservoirs, sewers, tunnels, shafts, tanks, bunkers, breeching.
★ SEALING . . Mine entries, slopes, shafts, rock cuts, air slacking.

CONSTRUCTION MACHINERY CO'S.
WATERLOO, IOWA, U.S.A.
. . . THE QUALITY LINE SINCE 1909 . . .

finished in October, and a 171,000-sq. ft. warehouse and repair shop at Minneapolis will soon be completed.

ESSO BUILDING—This 33-story, T-shaped, air-conditioned skyscraper rises to a height of 424 ft. at the north end of Rockefeller Center in New York City. Completed last spring for the Standard Oil Co. of New Jersey, it contains 350,000 sq. ft. of rentable area. It has a structural steel frame, limestone-faced walls backed with brick, cast aluminum spandrels and reinforced concrete floors.

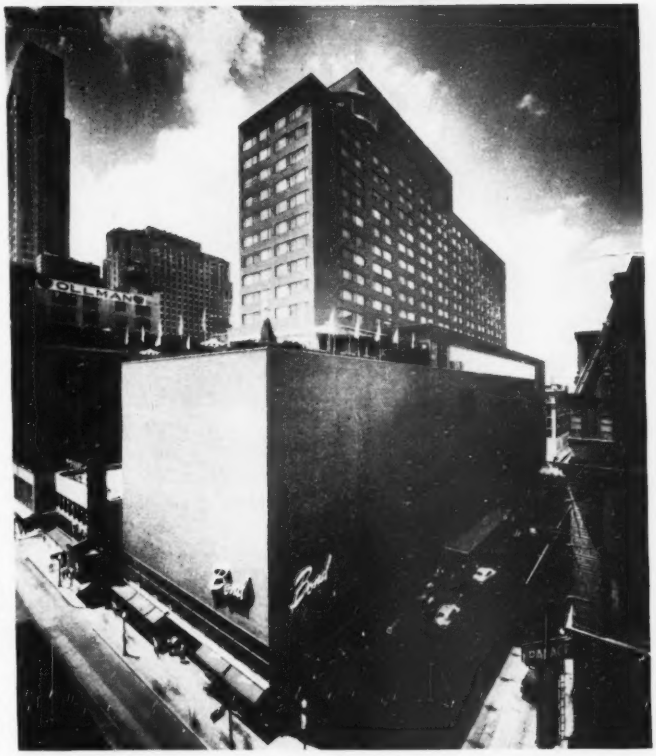
ILLINOIS INSTITUTE OF TECHNOLOGY—A $675,000 central heating plant will be completed in 1949 under a continuing $20,000,000 program for educational and research facilities that envisions 20 new structures totaling 19,000,000 cu. ft. Construction will start this year on a $600,000 headquarters for research and testing staffs of the Association of American Railroads and on a $750,000 unit for the Institute of Gas Technology. A $10,000,000 housing program for 1,800 dwelling units in 24 buildings is also underway. In 1948, two 4-story dormitories housing 218 students were completed at a cost of $240,000 each ($1.11 per cu. ft.). Scheduled for completion this summer is a 10-story apartment. Construction cost of the 120-unit building will be $1,040,000 ($1.32 per cu. ft.).

MUTUAL LIFE INSURANCE CO.—Excavation has been finished in preparation for an air-conditioned, 25-story, steel-frame home office building in midtown Manhattan, New York City. Having a ground-floor area of 150 x 200 ft., the structure will contain 550,000 sq. ft. of floor.

NEW ENGLAND TELEPHONE & TELEGRAPH CO.—The 22-story main office building in Boston is partly occupied. Covering a ground-floor area of 183 x 185 ft., the structure has a steel frame, with stone concrete fireproofing, and a limestone and granite exterior.

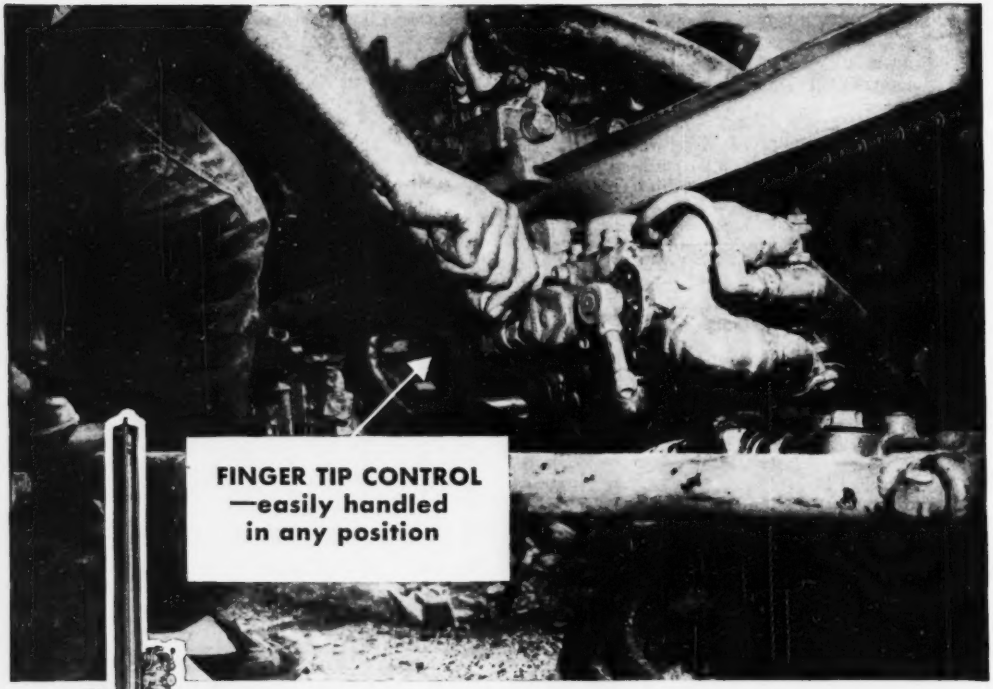
100 PARK AVE.—Excavation is under way for a 36-story, $20,000,000, steel-frame, air-conditioned office building near Grand Central Terminal in New York City. Lower floor areas of 32,000 sq. ft. will be reduced by setbacks at the 9th, 11th, 14th, 15th, 17th and 21st floors to 8,000 sq. ft. in the tower.

TEXAS MEDICAL CENTER—Two structures, constructed of rein-



TERRACE PLAZA BUILDING—20-story, $12,000,000, combined hotel and department store—was completed last July in Cincinnati. Air-conditioned, the structure is windowless from the 2nd to the 8th floor, where it is used for commercial activities. The hotel lobby is on the 8th floor.

GREATEST SINGLE RESIDENTIAL DEVELOPMENT in southern California is the $50,000,000 conversion of 640 acres in Los Angeles' Baldwin Hills. Plans call for 6,000 two and three-story apartment units, 8,000 homes, a large hotel and several 13-story apartment houses. Current phase is 50 acres of 2-story apartment buildings



The PIONEER and still the LEADER!

JOY LIGHTWEIGHT WAGON DRILL

Introduced by JOY 8 years ago—hundreds in use, nation-wide . . .

HERE'S WHY:

- MORE HOLE PER SHIFT with the *exclusive* "drill and blow" feature.
- REALLY LIGHTWEIGHT—only 750 lbs.—less than half the weight of conventional wagon drills.
- Easily operated by ONE MAN; mounts JOY 3" or 3½" drifters, or 55 or 65 lb. sinkers.
- POSITIVE LOCKING BRAKES—requires no spikes.

Consult a Joy Engineer

WRITE FOR BULLETIN

W&D C 2073

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

forced concrete and Texas shell limestone, have been completed. The $2,500,000 Professional Building, 14-story offices for doctors and dentists, was occupied last month and the 370-bed, $3,500,000 addition to the Hermann Hospital was dedicated this month. Bids will be taken soon for the $6,000,000 University of Texas School of Denistry and M. D. Anderson Hospital for Cancer Research, and funds are expected to be made available this year for the Post-graduate Medical School and the School of Public Health. Construction plans have been made also for a 277-bed, 7-story, $2,500,000 Shrine Children's Hospital, a 5-story, $2,000,000 Tuberculosis Hospital and a Central Outpatient Clinic and Pathological Institute.

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY—Construction of the $2,895,000 Battery Parking Garage for 1,050 cars was started in Sept., 1948, with completion expected in Dec., 1949. Located just north of the Manhattan plaza of the Brooklyn-Battery Tunnel in New York City, the reinforced concrete building covers a 50,000-sq. ft. area and will provide parking space on seven levels including the roof, the ground floor being partly occupied by stores.

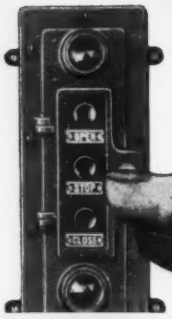
UNITED NATIONS HEADQUARTERS—Footings are being cast for the air-conditioned, 42-story, steel-frame, 72 x 300-ft. Secretariat Building on the east side of Manhattan in New York City. A fan-shaped general assembly hall, garages, a 600-seat theater and other structures are still in the blueprint stage. New York City will spend $15,000,000 for improving adjacent areas, including widened access streets.

VETERANS ADMINISTRATION—Part of a billion-dollar program, two hospitals—1,172 beds at Tomah, Wis., and 477 beds at Lebanon, Pa., have been completed—and 31 hospitals are in various stages of construction. Nearly finished: 399 beds at Providence, R. I.; 283 beds at Sioux Falls, S. D.; and 152 beds at Grand Junction, Colo. Completion in 1949: 1,000 beds at Brooklyn, N. Y.; 1,005 beds at Buffalo, N. Y.; 1,965 beds at Peekskill, N. Y.; 200 beds at Altoona, Pa.; 250 beds at Iron Mountain, Mich.; 200 beds at Ft. Wayne, Ind.; 162 beds at Minot, S. D.; 250 beds at Big Spring, Tex.; 450 beds at Shreveeport, La.; and 250 beds at Fresno, Calif. The remainder are expected to be ready in 1950. Planned,

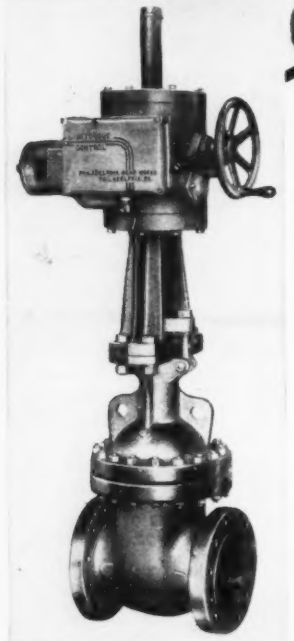
HOME OFFICE of John Hancock Mutual Life Insurance Co. in Boston, 30 stories high, is nearly completed. The air-conditioned edifice, tallest in New England, is of steel-frame construction faced with sandstone, granite and aluminum, is 250 x 270 ft. in plan and contains 1,000,000 sq. ft. of floor.

WESTERN HOME OFFICE for the Prudential Insurance Co. in Los Angeles, 10 stories high with 517,000 sq. ft. of floor area, officially opened for business in November, is estimated to have cost $8,000,000.

POSITIVE, SAFE AND AUTOMATIC



Push-Button CONTROL OF VALVES BY Limitorque



NOTE: Send for 96 page "Limitorque" Catalog—and please use your Business Letterhead when requesting same

-has been installed in the following Water Works and Sewerage Plants

WATER WORKS:

City of Syracuse, N. Y. ● City of Watertown, S. D. ● City of Winfield, Kan. ● City of Charleston, S. C. ● City of Jacksonville, Fla. ● City of Lansing, Mich. ● City of Miami, Fla. ● City of Oakland, Cal. ● Hackensack Water Co., N. J. ● City of Seattle, Wash. ● American Water Wks. & Elec. Co. ● Arcadelphia Water Co. ● City of Baltimore, Md. ● City of Cleveland, O. ● City of Erie, Pa. ● City of Harrisburg, Pa. ● City of Kansas City, Kan. ● City of Laramie, Wyoming ● City of Linn, Kan. ● City of Los Angeles, Cal. ● City of Lubbock, Texas ● City of Norfolk, Va. ● City of Olean, N. Y. ● City of Philadelphia, Pa. ● City of Sioux Falls, S. D. ● Montreal Water Board, Canada ● Newton, Kansas ● Municipal Pumping Plant, Kansas City, Kan. ● City of Hull, Ontario ● Mississippi River Comm.—Levee Control ● Cincinnati Water Purification Plant, O. ● City of Chicago, Ill. ● City of Detroit, Mich. ● Coney Island Fire Pumping Sta., N. Y. ● Pomona Pump Co., Sacramento, Cal. ● City of Pittsburgh, Pa. ● Louisville Water Works, Ky. ● U. S. Dept. of Interior—Bur. of Reclamation, Denver, Colo. ● Amesbury, Mass. Fire Pumping Sta. ● City of Owensbury, Ky. ● City of Pawtucket, R. I. ● City of New York, Ridgewood Reservoir Plant ● City of Allentown, Pa. ● Grand Coulee Dam, Wash. ● Virginia Hot Springs, Hot Springs, Va. ● Detroit Water Works, Grosse Point, Mich. ● New York City Water Dept.

SEWERAGE:

Baltimore Dept. of Sewers, Md.
Buffalo Sewage Disposal Plant, N. Y.
Cape May Sewage Disposal System, N. J.
Elizabeth Sewage Treatment Plant, N. J.
Wichita Sewage Treatment Plant, Kan.
Yonkers Sewage Treatment Plant, N. Y.
Westchester Co., Yonkers Sewage Plant, N. Y.
City of Stevens Point, Wis.
Jamaica Sewage Treatment Wks.
Colorado Sewage Treatment Plant, Denver, Colo.

Philadelphia Gear Works, INC.

ERIE AVE. AND G ST., PHILADELPHIA 34, PA.
NEW YORK • PITTSBURGH • CHICAGO
IN CANADA: WILLIAM AND J. G. GREEY LIMITED, TORONTO

Industrial Gears and Speed Reducers
LimiTorque Valve Controls

but not yet under contract, are 64 more projects.

BOSTON HOUSING—The housing authority had under way an 1,861-unit program, to cost $23,185,000. Of these, 817 one and two-family houses were completed.

FRESH MEADOWS—Scheduled to be finished this summer, this housing project of the New York Life Insurance Co., in Queens, N. Y., will shelter 600 families in two 13-story buildings and 2,400 families in 140 two and three-story houses.

LONG BEACH—Griffith, Walker and Lee plan expenditure of $36,000,000 in the Lakewood district, where 1,500 homes have been built to date.

HANCOCK VILLAGE—The 789-family housing project of the John Hancock Mutual Life Insurance Co. in the Brookline-West Roxbury, Mass., area is fully occupied. When completed this summer, the development will include three large 2 and 3-story, concrete-frame garages and a shopping center, in addition to the basementless, radiant-heated, 2-story, brick and cinder-concrete houses.

METROPOLITAN LIFE—In **New York City**, Stuyvesant Town's 35 twelve and thirteen-story apartment buildings will be completed this Spring and will house 8,755 families. The 21 fifteen-story buildings, for 2,495 families, in Peter Cooper Village, will all be finished this year, with only five left to be completed. And the seven 13-story buildings, with 1,232 apartments, in Riverton were completed last Spring. In **Los Angeles**, foundations are being cast to add 2,754 apartments to the 1,314 that were built at Parklabrea during the war. Several blocks of 2-story houses and 18 thirteen-story buildings are planned, with completion scheduled for 1950. In **San Francisco**, construction is in a similar stage at Parkmerced, where 1,816 apartments in 11 thirteen-story buildings will be added to the 1,687 apartments completed during the war.

NEW YORK CITY HOUSING—The authority completed in 1948: Brownsville, J. W. Johnson, Abraham Lincoln, Amsterdam, Marcy and Jacob Riis (Federal) projects to house 7,925 families at a construction cost of $59,543,907. Partly occupied: Jacob Riis (City), Astoria and Gowanus projects with 2,821 apartments, costing $27,313,706 to build. Bricks are being laid for the $14,080,186 Lillian Wald development for 1,861 families. Started in 1948 and now in the foundation stage: Woodside, South Beach, Pelham Parkway, Eastchester, Gov. Smith, Todt Hill, Albany, Glenwood, Nostrand, Sheepshead Bay, Dyckman, Gun Hill, Bronx River and Patterson for 15,524 families. Exclusive of the Glenwood, Nostrand, Dyckman and Gun Hill Houses, for which all bids have not yet been taken, construction cost for these is $108,845,865. The Lincoln and Smith Houses have structural steel frames, all others reinforced concrete.

GLEN OAKS VILLAGE. Second section of 2,532 apartment units is now occupied by more than 700 families. The first section, for 576 families, was finished early last year. Located in Queens, N. Y., the project, with current mortgage commitments of $25,000,000, is the largest FHA building operation underway. (Gross-Morton Co. photo)

PARK FOREST—Over 250 rental dwelling units were completed in 1948 and 2,500 more should be finished during 1949 under American Community Builders' plan for developing 2,400 acres into a new suburban town for 30,000 persons 27 mi. south of Chicago. Construction of 4,000 houses for sale will follow the first-phase $30,000,000 rental program. A 1-mgd. water-softening plant will be in operation this spring and a shopping center is now underway. Rental dwellings are duplex with basement. Construction is wood frame with brick or stone veneer, or wood or asbestos siding.

PUEBLO GARDENS—The first 700 houses, built of precut wood, at Tucson, Ariz., will be completed this Spring by Del E. Webb. The second 500 units are in the planning stage. Ultimately there will be 3,000 homes.

WATER USE AND CONTROL

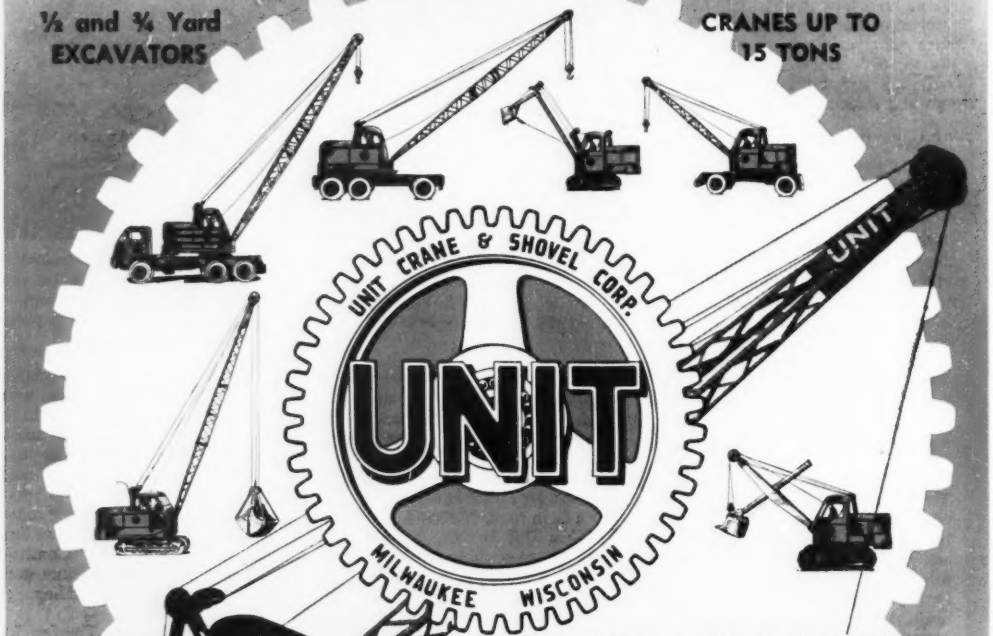
COLUMBIA RIVER BASIN — The major undertaking in the Columbia River Basin is the **Columbia Basin Irrigation Project**, which is estimated to cost $600,000,000 and will supply irrigation water to one million acres in a loop of the river south of Grand Coulee Dam (see map on p. 147). In October, 1948, a contract was let by the Bureau of Reclamation for completion of the pumping plant that will use power generated at the dam to raise irrigation water into the **Feeder Canal** leading to an equalizing reservoir formed in the Grand Coulee by **North Dam** and **South Coulee Dam**. The pumping plant will be the world's largest, containing ultimately twelve 65,000-hp. centrifugal pumps with a capacity of 1,350 cfs. each, operating against a head of 310 ft. Contracts for six pumps and motors were let in 1946 and the first will be in operation by the end of 1951. All work on the **Feeder Canal** will be under contract by spring. Bids have been called for **North Dam**; work on **South Dam** is underway. The **Main Canal** above Long Lake is completed, except for **Bacon** tunnel and siphon, which will be completed in June, at which time **Long Lake Dam** also will be finished. Contract for the **Main Canal** below that point was let in October, for com-

Super Service

ON ALL TYPES OF JOBS!

½ and ¾ Yard EXCAVATORS

CRANES UP TO 15 TONS



Every UNIT is FULLY CONVERTIBLE

Regardless of whether your job calls for a shovel, clamshell, magnet, dragline, trenchoe, grapple or backfiller, a UNIT machine easily "fills the bill"! For UNIT is convertible to ANY attachment and gives an excellent account of itself on ALL types of service. The change from one attachment to the other can easily and quickly be made on the job, by any ordinary mechanic. UNIT exclusive features include: Automatic traction brakes... Disc type clutches... One-piece cast gear case and above all, UNIT's safety-promoting FULL VISION CAB.

You can tell it's a UNIT by the FULL VISION CAB. There's no other cab like it.

UNIT CRANE & SHOVEL CORP. 6315 WEST BURNHAM STREET MILWAUKEE 14, WIS., U.S.A.

pletion in 1950. About 6½ miles of the **West Canal** will be completed in June; a second 14-mile section will be put under contract in the spring, and a third section 14.5 miles long will start in September. A $7,615,000 contract for **Soap Lake** siphon was let in December. The first section of the **East Low Canal**, 12 miles, will be completed in June; contracts for the remaining sections will be let this year. **O'Sullivan Dam** (formerly Potholes Dam) will be completed in July, and bids for a 7-mile section of **Potholes East Canal** are to be called in the spring.

Expansion of the power plants at **Grand Coulee Dam** is continuing. The nine 108,000 kw. units in the left power house are in operation and all of the 9 units for the right plant are under contract, the first three being scheduled for operation for April 15, July 15 and Oct. 15, respectively.

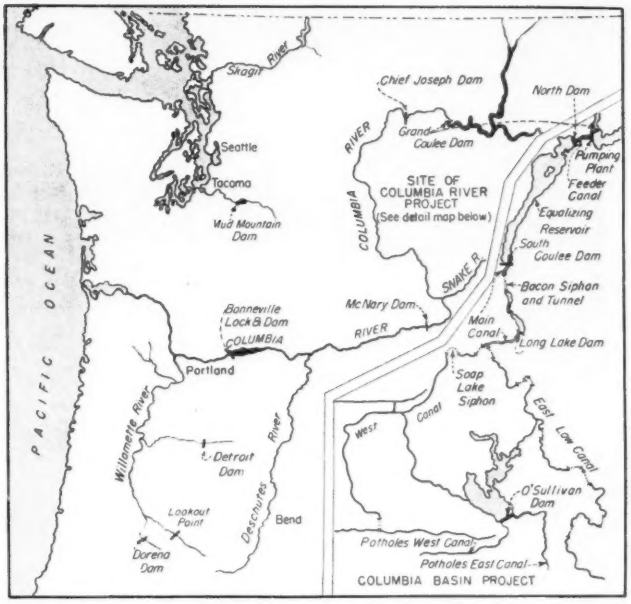
Anderson Ranch Dam on the South Fork of the Boise River in Idaho (not shown on the map) is complete except for the spillway. The world's highest earthfill, it is 456 ft. high and 1,350 ft. long at the crest. Work on the two 15,000 kva. generators in the power plant will be completed this year.

Work is to start this year on another project in Idaho—**Palisades Dam** on the Snake River 65 miles east of Idaho Falls. It is to be an earthfill 260 ft. high and 2,300 ft. long for power, flood control and supplementary irrigation. Initial power installation will be two 20,000-kva generators.

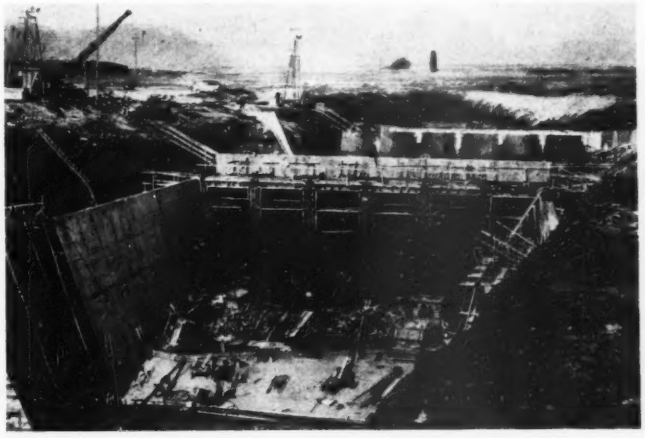
Construction of **Hungry Horse Dam** on the South Fork of the Flathead River in Montana (not shown on the map) was begun in June, 1948. It is a concrete arch 530 ft. high for power flood control and future irrigation supply. Four 75,000-kva. generators are under contract for operation in June, 1952.

These four projects are being built by the Bureau of Reclamation.

Construction on the biggest job of the Corps of Engineers on the Columbia, **McNary Dam**, moved into high gear in 1948 with the awarding of a $21,000,000 contract for construction of the 86x675-ft. navigation lock and part of the main dam. To cost almost $300 million, this project will include 980,000 kw. of generating capacity, with first power delivery expected in 1954. Construction of the $205 million **Chief Joseph Dam** on the Columbia just below **Grand Coulee Dam** by the Corps of Engineers has been authorized, also the $86,000,000 **Ice Harbor Dam** and lock on the Snake River, but no appropriation has been made.

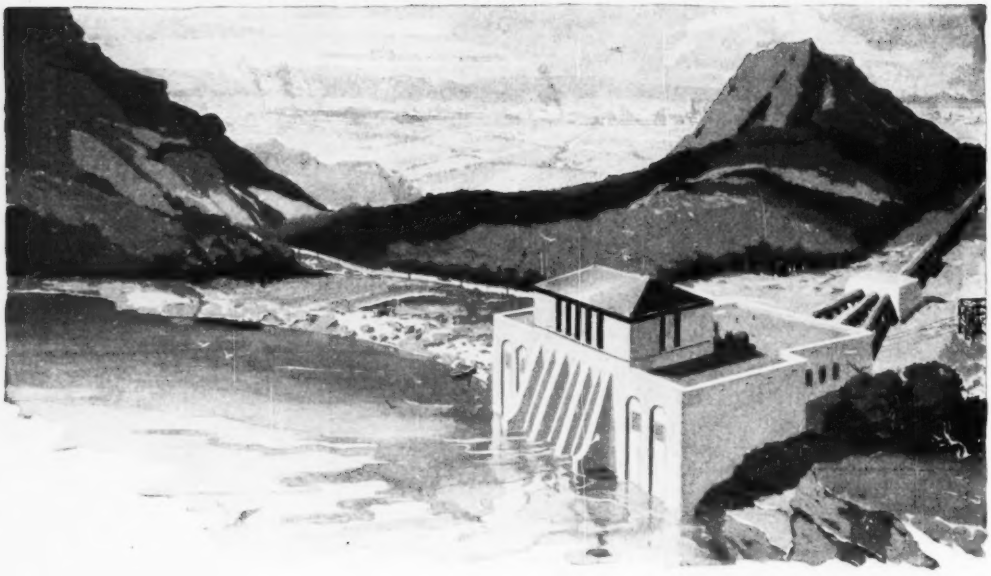


IN THE PACIFIC NORTHWEST several large dams are under construction on the Columbia and its tributaries. Largest irrigation work is the Columbia Basin project.

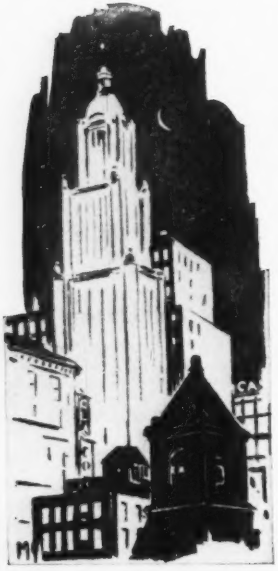


HEADWORKS for the Main Canal of the Columbia Basin irrigation project. This structure will control the flow from South Coulee Dam.

On the Willamette River and its tributaries good progress was made on three flood control, navigation and power projects. Preliminary phases of construction at the **Detroit Dam** on the North Santiam River are about completed. Bids on the main structure were opened late in February. Estimated total cost of this dam, including powerhouse and re-regulating reservoir, is $65,000,000. **Dorena Dam** on Row River was 75 percent completed at the year's end and will be finished in November 1949. Relocation of the Lost Creek section of the Southern Pacific R.R. is under way, at a cost of more than $2,000,000, preparatory to construction of **Lookout**



WHEN Millions Live As One



ADVENTURESOME folk, since the beginning of time, have migrated . . . Settling in tiny clusters . . . Spreading spider-web fashion to dot the land with villages and towns . . . While others pressed forward, facing dangers concealed behind each rock and tree!

But with the growth of cities, new perils arose and multiplied . . . People were living too closely together . . . Epidemics and pestilence exacted their toll . . .

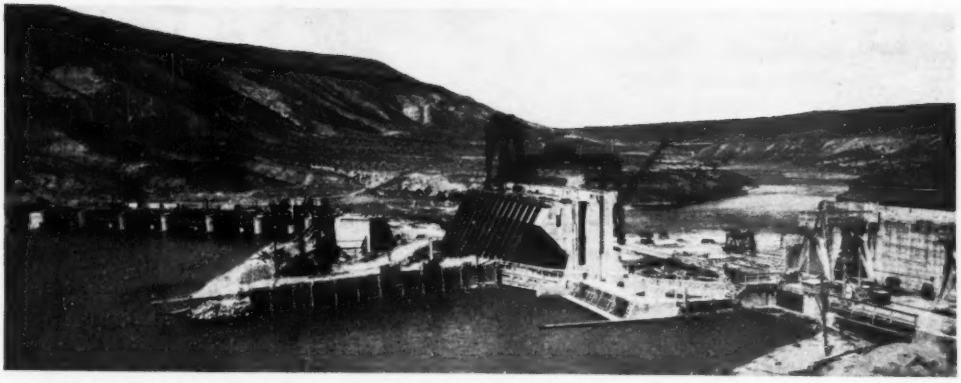
Then science and modern machinery rescued them from exposure to disease emanating from impure water and unsanitary waste disposal . . . And, today, *millions live as one!*

Rotovalves and Axial Flow Pumps, by Smith, are in service—controlling water, controlling floods and regulating sewage discharge, in important systems, far and wide.

The recognition and acceptance given these products are not accidental. They come from superior design, resulting from our more than 75 years of hydraulic experience . . . Facts that are significant, because they are proof positive of our ability to serve you, *if you place your problem in our hands!*

S·MORGAN SMITH COMPANY
YORK·PENNSYLVANIA~U·S·A·
If It's Hydraulics-Put It Up to Us·

POWER by SMITH



LOWER SALMON DAM on the Snake River in Idaho is being built by the Idaho Power Co. to add 60,000 kw. to the power supply of the region. The dam and power plant now are practically completed and will be in production soon.

Point Dam on the Middle Fork Willamette, at a cost of $51,000,000, for completion in 1951.

A $50,000,000 hydroelectric development of the Idaho Power Co. on the Snake River in southern Idaho will provide 150,000 kw. generating capacity. Included are the **Lower Salmon Dam**, a 100,000 cu. yd. gravity structure; a similar structure near **Bliss**, Idaho; and other smaller installations. (69,000 kw.) will be completed early in 1950.

CENTRAL VALLEY PROJECT—Work on the Central Valley Project of the Bureau of Reclamation in California during 1948 was centered on the canals, of which there will be 350 miles, the pumping plants and power distribution lines. About 26 miles of the 117-mile **Delta-Mendota Canal** is completed and an additional 29 miles is under contract, as is the **Tracy** pumping plant of 4,600 cfs. capacity. Studies are being made for the **Delta Cross Channel** and bids for the five 1,520-cfs. pumps for that channel will be called in July. The first 70 miles of the **Friant-Kern Canal** will be completed this spring. The 47-mile **Contra Costa Canal** is completed and transmission lines to the pumping plants are being built. **Keswick Dam** and power plant are scheduled for completion in 1950.

The Corps of Engineers has preliminary work under way at three multiple-purpose projects in California's Central Valley. They are **Folsom Dam** on the American River. **Pine Flat Dam** on the Kings River and **Isabella Dam** on the Kern River.

POWER FOR CALIFORNIA—The Pacific Gas and Electric Co.'s major hydro-electric unit completed in 1948 was the 99,000-kva. **Electra** project on the Mokelumne River. Under way on the Feather River are the 75,000-kva. **Cresta Dam** and power plant, scheduled for completion in June, 1949, and the 126,000-kva. **Rock Creek Dam** and power plant to be on the line early in 1950. Several major steam plants are also involved in the expansion required by the lack of wartime construction and the phenomenal postwar population and industrial growth.

A NEW TREND in hydro power plant design is exemplified by the outdoor-type station of the Lower Malad plant of the Idaho Power Co. in southeast Idaho.

FLOOD CONTROL work by the Army Engineers in the Los Angeles County drainage area, estimated ultimately to cost $361 million, continues with some $30,000,000 being currently spent on channel improvements in the Los Angeles River and elsewhere. Land acquisition has started for the **Whittier Narrows** project, a $50,000,000 flood control works with a drainage area of more than 550 sq. mi. on the San Gabriel and Hondo rivers.

COLORADO RIVER BASIN—Construction work is well along on **Granby Dam** at the headwaters of the Colorado River in Colorado and the four dikes that will form the main reservoir for storage of flood waters to be diverted under the Continental Divide as part of the **Colorado-Big Thompson** power and irrigation project of the Bureau of Reclamation. The Granby pumping plant is 60 percent complete and work on the uncompleted section of the 2.1-mile **Granby Pump Canal** will start in the spring. **Adams Tunnel** under the divide is completed. On the east slope, **Spring Canyon Dam** was completed in September, and the three other earth-fill dams—**Horsetooth, Dixon Canyon** and **Soldier Canyon**—that are to form **Horsetooth** reservoir will be completed this coming summer. The **Marys Lake** and **Estes Park** power plants will be completed in 1951. **Olympus Dam** is nearing completion.

At **Hoover Dam**, contracts were let recently for two additional generators of 82,500-kva capacity, which are to be in operation by May, 1952. They will bring the capacity of the plant up to 1,199,800 kva. Space for only two more generators remain in the plant.

Diversion of the Colorado River at **Davis Dam**, 67 miles below Hoover Dam, was begun during 1948 upon

Maximum speed of assembly reduces costs—helps you get *True Fastener Economy*. The *accuracy* and *uniformity* of RB&W Carriage, Machine and Lag Bolts are the products of more than a century of continuous research and progressive development in fastener manufacturing . . . backed by the skill of four generations of RB&W men and women.

RB&W

THE COMPLETE QUALITY LINE

Plants at: Port Chester, N. Y., Coraopolis; Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Oakland, Portland, Seattle. Distributors from coast to coast.

104 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

RUSSELL, BURDSALL & WARD
BOLT AND NUT COMPANY

completion of the diversion channel. Subsequently the site of the dam was unwatered and placing of the impervious fill was begun. The dam is to be an earth and rock-fill structure 138 ft. high and 1,600 ft. long. It will be completed in October, when work will start on the power plant to accommodate five 45,000 kw. generators. Davis Dam is for regulation of the flow of the river below Hoover Dam as required by the water treaty with Mexico signed in 1944.

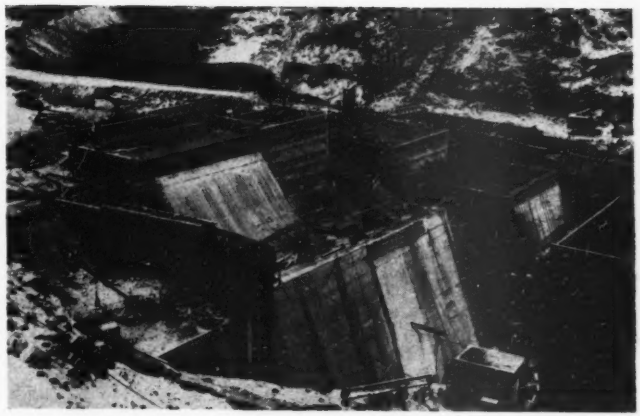
On the **Gila** irrigation project in Arizona, work on the 18-mile **Wellton-Mohawk** canal and its three pumping plants has begun. This extension of the project is expected to be completed in 1952.

These four projects on the Colorado and its tributaries are being built by the Bureau of Reclamation.

Across the Colorado River in the reach where it forms the boundary between United States and Mexico, the Mexican government has begun construction of the **Morelos** diversion dam authorized by the 1944 treaty. It is a low structure of the floating type 1,400 ft. long, 602 ft. of which is an open spillway and 702 ft. is controlled by gates. Construction began in September and is now 21 percent complete, with July 1950 set as completion date.

PROVO RIVER, UTAH—Work is now in progress on the last section (7.8 miles) of the 41-mile aqueduct to bring water from **Deer Creek** reservoir in the Provo River to Salt Lake City. Also under construction is the **Duchesne** tunnel and **Murdock** diversion dam. **Jordan Narrows** pumping plant and siphon will be completed this summer.

MISSOURI RIVER BASIN—Flood control and river development work continues to expand under the multi-billion dollar Pick-Sloan plan—a joint program of the Army's Corps of Engineers and the Bureau of Reclamation. Three major earth dams are under construction by the Corps of Engineers on the Missouri River main stream in the Dakotas. At the $160,000,000 **Ft. Randall Dam** (160 ft. high, 10,000 ft. long, 30,000,000 cu. yd. embankment), near the Nebraska border, 11,000,000 cu. yd. were moved during 1948 to complete a $4,500,000 contract for first-stage embankment. Work is now starting on an 8,000,000-cu. yd. $4,198,000 second-stage job. For the outlet works, the driving of 12 tunnels ($8,600,000) and construction of the downstream portions ($11,000,000) has been contracted for, with work scheduled to start this spring. A low bid of $11,839,517 has been received for the upstream section. Pickstown, construction town for 3,500 at the damsite, is 50 percent complete.



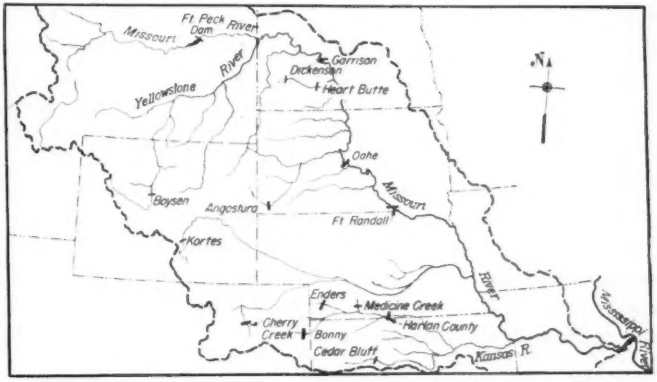
ROCK CREEK DAM on the Feather River in California will supply the largest hydro plant in the Pacific Gas & Electric Co. expansion program.

Oahe Dam 6 miles above Pierre, S. D., got underway with awards of $670,000 for temporary housing and a 4-mile access highway. The dam will have a 9,300-ft. crest, a maximum height of 242 ft., and will require 78,000,000 cu. yd. of fill. The first of the earthmoving contracts for the $181,000,000 project will be let this year.

On the $188,000,000 **Garrison Dam**, 75 mi. above Bismarck, N. D., 7,000,000 cu. yd. of earth have been moved on the $6,350,000 contract for Stage 1 embankment, and a $13,600,000 contract has been let for Stage 2, involving 20,000,000 cu. yd. of excavation and 17,000,000 of embankment. A total of 69,000,000 cu. yd. will be required for the dam, which is to be 12,000 ft. long and 210 ft. high. It will store 23,000,000 acre-ft. Contracts totaling $10,000,000 have been let for the construction town, Riverdale. New contracts totaling $64,000,000 are planned for 1949 letting, including outlet tunnels and powerhouse foundations.

Near Denver, the $19,000,000 **Cherry Creek Dam** is 65 percent complete with over $10,000,000 in contracts in force, under supervision of the Corps of Engineers. Half of the 15,000,000-cu. yd. rolled-earth embankment has been placed; the balance will be finished this year. Project completion date is June 1950.

At **Harlan County Dam** (106 ft.



ON THE MISSOURI RIVER three large dams are being built by the Army Engineers, chiefly for flood control. They also are building storage dams on lower tributaries. At the headwaters the Bureau of Reclamation is building irrigation dams.

WORK WANTED
Just finished moving 1,225,000 yards on Bayou project. Sturdy, reliable, efficient dragline wants more work. Last boss says: "Sweetest machine I ever ran!" Won't be free long — apply soon! Box 200-W
MACHINE OPERATOR

No Idle Hours for This Worker!

Widening and deepening a Texas bayou, this Bucyrus-Erie 200-W walking dragline excavated 1,225,000 yards of sandy loam — almost half of it dug under water. Despite numerous moves and soft footing, the 200-W compiled a consistently high daily output average — the kind of record that is familiar to 200-W owners everywhere. They know from experience that its strong, simple construction means dependable performance with minimum time out for maintenance when far from service facilities. They know, too, that the 200-W's fast cycle, great operating range, exceptional stability and maneuverability enable it to deliver the consistently high output they need. Proper weight distribution, smooth walking mechanism and easy control all contribute to outstanding production records wherever this versatile walker goes to work. Boom lengths on larger machines up to 250 feet; bucket capacities to 25 cubic yards.

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

32MA9

high; 12,000 ft. long; 13,000,000 cu. yd. embankment) on the Republican River in Nebraska, 4,300,000 cu. yd. have been excavated and 3,200,000 yd. of earth fill placed. Contracts to date total $35,000,000 including 10 miles of railroad relocation. A further contract to relocate 20 miles of Burlington R.R. trackage will be let this year. Completion of the $41,000,000 project is scheduled for 1952.

A second power unit was installed at **Ft. Peck Dam** in 1948 and a third is under way. Present capacity is 50,000 kw. of an ultimate 105,000 kw.

Flood protection work on the lower Missouri at **Kansas City** is 40 percent complete. A flood wall has been completed on the Missouri side and $2,600,000 in contracts are in force for levees in Kansas. For the latter, a 1,742-ft. concrete floodwall has been finished and 1,500,000 yd. of fill placed for a 15-ft. levee whose completion is forecast for July. Additional levee and floodwall work is to be done this year in Kansas. Downstream, the $2,500,000 **Liberty Bend Cutoff** to shorten the Missouri is virtually complete. An 1,883-ft. high-level bridge to carry U. S. Route 71 over the new channel is already open to traffic, and the river cutoff will be in operation this spring.

The Bureau of Reclamation has the following large projects underway in the upper part of the Missouri River valley: **Boysen Dam** and power plant, an earth and rock-fill 150 ft. high and 1,100 ft. long on the Big Horn River in Wyoming—work began late in 1947 and is scheduled for completion in 1952. Included is a 15,000 kva. power plant and relocation of 14 miles of railway. Also in Wyoming is **Kortes Dam**, a concrete structure 200 ft. high and 400 ft. long, and a power plant of three 12,000 kw. units. Work on the dam and power station is 60 percent complete. **Angostura Dam** on the Cheyenne River below the Wyoming-South Dakota border is to irrigate 16,000 acres. It is a concrete dam 160 ft. high flanked by an earth abutment, a total length of 1,900 ft. About 70 percent of the concrete has been placed. Completion date is July, 1950.

In North Dakota both **Heart Butte Dam** and **Dickinson Dam** are under construction on the Heart River. They are earth fills, 1,850 ft. and 2,275 ft. long and 135 and 50 ft. high. Dickenson Dam was first started in December. Heart Butte will be completed in 1951.

Bonny Dam on the South Fork of the Republican River in Colorado, an earthfill 9,300 ft. long and 130 ft. high, was started in December. **Enders Dam** on Frenchman Creek in Nebraska, an earthfill 2,570 ft. long and 100 ft. high, is well under way, with completion scheduled for the fall, and **Medicine Creek Dam**, also in Nebraska, 4,000 ft. long and 102 ft. high, is one third complete.

EXCAVATING for the tailrace and stilling basin below Fort Randall Dam on the Missouri River in South Dakota.

MISSISSIPPI LEVEES – Enlargement and construction of 277 miles of levees on the Mississippi River between Wood River and Gale, Ill., is being carried out by the Corps of Engineers. The work involves placement of 99,000,000 cu. yd. of earth. At present 28 contracts, which involve $6,500,000, are under way. In 1948, 9,330,000 cu. yd. were placed, and 3,250,000 cu. yd. remain to be placed under these contracts. Specifications for 17 more contracts for handling 8,953,000 cu. yd. are being prepared for bids this year. Included in the project is a low-water overflow dam in the Wood River diversion channel near Alton, Ill. costing $798,000, which is 80 percent complete.

DAMS ON OHIO TRIBUTARIES and rivers of the southeastern states are primarily for flood control with some power and regulatory storage.

CHAIN OF ROCKS CANAL—All of the excavation has been completed for two parallel navigation locks (1,200 x 110 ft. and 600 x 110 ft.) at the south end of an 8-mile canal on the Illinois side of the Mississippi river near St. Louis to bypass the hazardous **Chain of Rocks** reach. Over 10 percent of the 400,000 cu. yd. of concrete for the $16,000,000 locks has been placed, with completion scheduled for late 1950. A $1,500,000 high-level bridge to carry U. S. Route 66 over the canal was finished late in 1948. Bids for the first part of the construction of canal and levees above the locks will be taken this spring. The canal will have a 300-ft. bottom width, 1 on 3 side slopes, an average depth of cut of 35 ft., and will involve 23,000,000 cu. yd. of excavation.

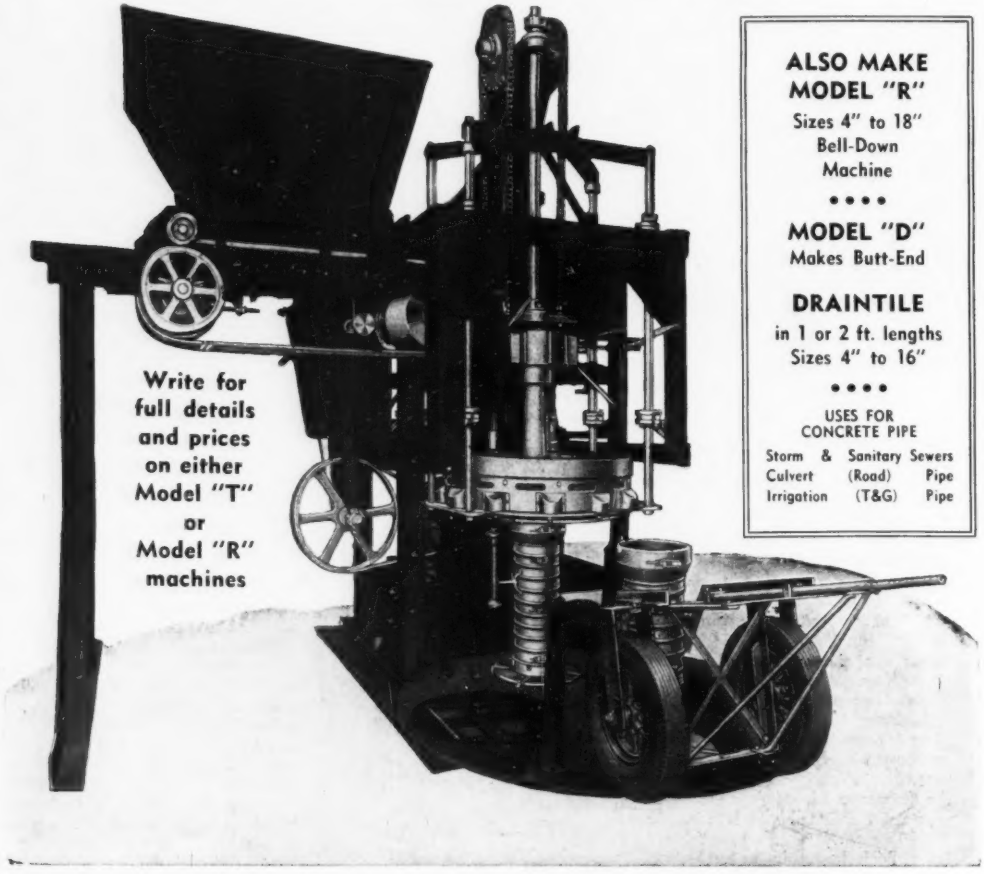
ILLINOIS RIVER—The outlet works were completed in 1948 for the $1,560,000 **Fondulac Dam**, a unit of the $10,000,000 **Farm Creek** project to prevent flooding of East Peoria, Ill., being built by the Army Engineers. About 90 percent of the rolled-earth embankment has been placed, spillway concreting will start this spring. Farm

CONCRETE PIPE MACHINERY CO.

MODEL "T" BELL-UP "McCRACKEN" MACHINE

FOR MAKING PLAIN AND REINFORCED CONCRETE PIPE

Range of Sizes—4" to 36"—90% of the Market



Write for full details and prices on either Model "T" or Model "R" machines

ALSO MAKE
MODEL "R"
Sizes 4" to 18"
Bell-Down
Machine

• • • •

MODEL "D"
Makes Butt-End

DRAINTILE
in 1 or 2 ft. lengths
Sizes 4" to 16"

• • • •

USES FOR CONCRETE PIPE

Storm &	Sanitary	Sewers
Culvert	(Road)	Pipe
Irrigation	(T&G)	Pipe

PACKER-ROLLER-HEAD PROCESS

LEADS THE WAY TO MORE PROFITABLE PIPE BUSINESS

Eight-Hour Shifts Produce:

SEWER
Plain B & S Pipe—
2400 feet — sizes 4" to 10"
1750 " — " 12" to 18"
1200 " — " 21" to 24"

For Full Details Write to ↓

CULVERT "ROAD"
Reinforced T & G Pipe—
1600 feet — sizes 12" to 18"
1100 " — " 21" to 24"
900 " — " 30" to 36"

EXPORT OFFICE **Concrete Pipe Machinery Co.** —MAIN OFFICE—

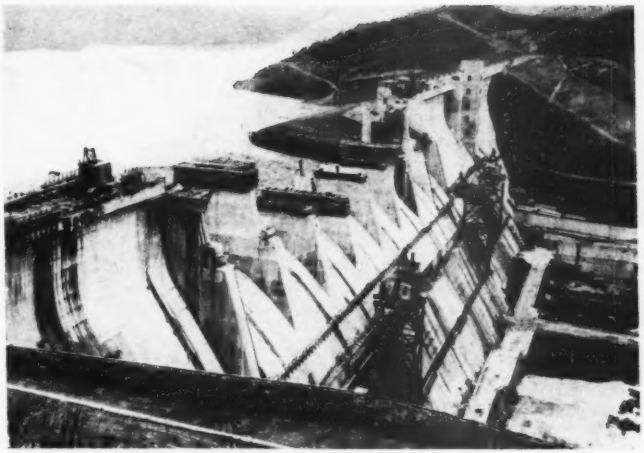
121 Broad St., New York (4), N. Y. Cable Address: Macpipe Sioux City (19), Iowa, U.S.A.

Creek's $2,000,000 **Farmdale Dam** will be advertised in May. It will be a 1,275-ft. rolled fill 80 ft. high. A $1,900,000 contract has already been let for relocation of 4½ miles of the Toledo, Peoria & Western R.R. main line around the reservoir.

OHIO RIVER VALLEY – Contracts totaling $59,000,000 were awarded last year by the Corps of Engineers for river and harbor, and flood control projects in the Ohio River Division. Nine projects were completed at a cost of $24,000,000, while an estimated $58,100,000 worth of work on 30 projects is expected to be placed under contract this year. For the 274,000 acre-ft., $44,500,000 **Conemaugh Reservoir** on the Conemaugh River above Pittsburgh, Pa., grading, tunnel work and bridge substructure for relocation of 16 miles of the Pennsylvania R.R. was practically complete at the end of 1948 at a cost of $8,550,000. Bridge superstructures and track work are more than half complete. Contract for the dam proper is to be let soon. The 631,000 acre-ft., $29,900,000 **Bluestone Reservoir** on the New River in W. Va., was 80 percent completed, while the dam, itself, was entirely completed. Other major reservoirs, together with their percentages of completion are: **Delaware Reservoir**, Ohio, 72 percent; **Dewey Reservoir**, Ky., 60 percent and the **Dillon Reservoir**, Ohio, 37 percent. The $23,200,000 flood wall and levee project at **Louisville**, Ky. was nearly one-fourth completed at the end of 1948.

On the Cumberland River, **Wolf Creek Reservoir** in Kentucky estimated to cost $76,600,000 and to provide 6,089,000 acre-ft. of storage and ultimately 270,000 kw. in power was 39 percent completed. Closure of the dam for the $43,340,000 **Center Hill Reservoir** in Tennessee had been made and the entire project, designed to store 2,092,000 acre-ft. of water and to generate 135,000 kw. of electric power, was 64 percent completed. **Dale Hollow Reservoir**, estimated to cost $24,270,000 and provide 2,092,000 acre-ft. of storage and 36,000 kw. of power is reported to be 95 percent completed.

A $6,343,700 contract was awarded last September by the Corps of Engineers for construction of the **Morgantown** lock and dam on the Monongahela River in West Virginia, which will replace two old locks and dams completed in 1903. Work has just started on a $7,263,000 contract in connection with reconstruction of **Locks 2** near Pittsburgh, Pa. It involves the construction of a 56x360-ft. river chamber in the new locks, and demolition of two 43-year old locks. Contracts for a 110x720-ft. land chamber in the project are expected to be let early next year.



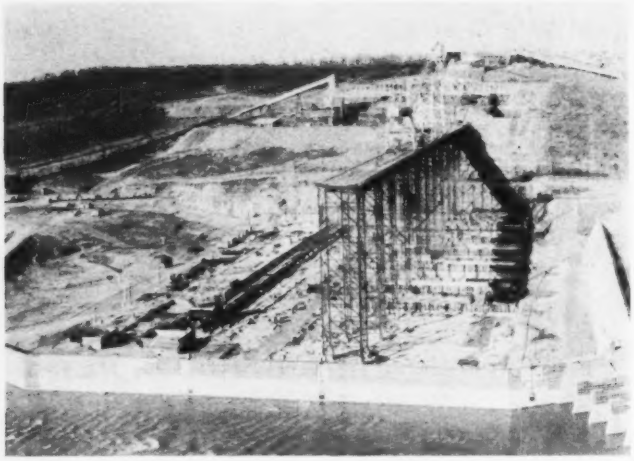
STORAGE OF WATER behind Center Hill Dam was begun in December, before the dam was completed, to cut down a flood crest in the Cumberland River.

YAZOO RIVER BASIN–A $5,430,000 contract for the 85-ft. rolled-fill embankment, and concrete spillway for **Endi Dam**, on the Yacoma River, is 40 percent completed. A $9,100,000 contract for the 80-ft. rolled-fill embankment and concrete spillway for the **Grenada Dam**, on the Yalobusha River is 44 percent completed. Contracts are expected to be let this year for river closure, outlet works and reservoir clearing for both flood-control projects.

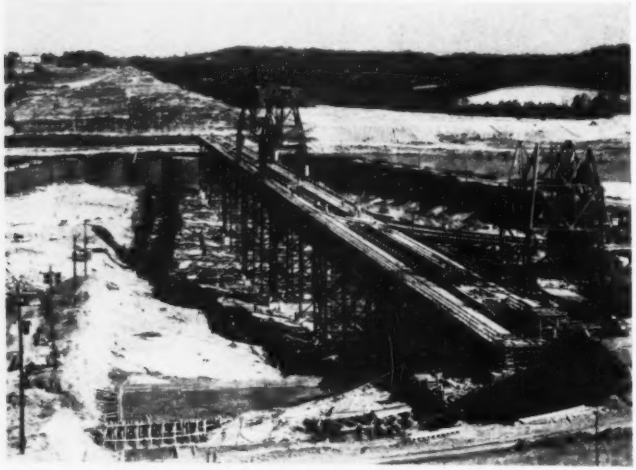
RED RIVER BASIN–**Altus Dam** of the W. C. Austin project being built by the Bureau of Reclamation on a tributary of the Red River in Oklahoma will be entirely completed this year, as will the canals and laterals of the irrigation system.

ARKANSAS RIVER BASIN – Embankment work on **Tenkiller Ferry Dam** is 83 percent complete and a contract of $3,600,000 for spillway and outletwork has just been let by

MANY RESERVOIRS for storage of flood waters are being built in Texas and on tributaries of the lower Mississippi River.



A CONCRETE COFFERDAM is being used at Bull Shoals Dam in Arkansas to keep the White River out of the working area.



CLARK HILL DAM in Georgia is being built to store flood waters and to improve navigation on the lower river as well as for power development.

the Corps of Engineers. This is a combined flood-control, power and water supply project in northeastern Oklahoma estimated to cost $23,000,000 and scheduled for completion in 1953. **Wister Dam**, also in eastern Oklahoma on a tributary of the Arkansas, a rolled-fill structure, is scheduled for completion this year. It already has been used to impound part of the flood caused by a 7-in. rainfall.

Fort Gibson Dam on the Grand River, largest dam in the Arkansas Basin, is 73 percent complete. It is a concrete structure for flood control, power and water supply. Contracts totaling about $5,000,000 for highway and railroad relocation, and reservoir clearing, will be let this year. Completion is scheduled for late 1951 or early 1952. **Hulah Dam**, on a headwater tributary, is a 4,730-ft. rolled-fill, with a 472-ft. concrete spillway. A $5,100,000 contract for completion of the dam is 18 percent completed, with about $1,100,000 worth of reservoir clearing and highway relocation to be let this year. The completion date is late 1950. Reservoir clearing has just been started back of the 2,920-ft. rolled-filled **Heyburn Dam**, while the dam itself, is 40 percent completed. **Fall River Dam**, on a tributary of the Verdigris River, will be completed early this year. It is a flood-control structure, with 5,545-ft. of rolled-filled and 470-ft. of concrete spillway.

OUACHITA RIVER SYSTEM – Two flood-control and power dams are being built by the Corps of Engineers on tributaries of the Ouachita River in the lower Mississippi River basin. A $6,680,000 contract for **Narrows Dam**, a concrete structure 185 ft. high, is 40 percent complete. Additional contracts totaling $1,400,000 for two 9,444 kva. generators and a reservoir clearing contract will be let this year, with completion scheduled for February, 1950. Two diversion tunnels for **Blakely Mountain Dam**, a rolled-fill near Hot Springs, Ark., are 35 percent completed, under a $4,470,000 contract. Contracts for the main embankment and outlet structures, estimated to cost $17,000,000, will be let this fall.

WHITE RIVER BASIN–Work on the entire $76,300,000 **Bull Shoals** flood-control and hydro project on the White River in Arkansas was 22 percent complete Feb. 1, and the $22,500,000 dam contract was 30 percent complete. The dam will be finished in the fall of 1950. Power house construction, estimated to cost $4,000,000, will not start until May, 1950, and will be completed two years later.

TEXAS FLOOD CONTROL.–In Texas, among the dams now under construction by the Corps of Engineers are four on the Trinity River for flood control. They are **Benbrook Dam** ($16,520,000) near Fort Worth; **Grapevine Dam** ($16,564,000); **Lavon Dam** ($16,380,000); and **Garza-Little Elm Dam** ($26,644,900) near Dallas. The Benbrook, Lavon, and Grapevine projects are scheduled for completion in 1951. Construction of Garza-Little Elm Dam is just getting under way and will be completed in 1953.

In the Neches-Angelina river basin, work has been started on one of four authorized flood-control dams, **Dam "B"** ($6,500,000) near Jasper. It will be completed in 1951. Construction of **San Angelo Dam** ($18,525,000) near San Angelo in the Colorado River basin is under way, with completion set for 1952.

In the Brazo River basin the $41,794,000 **Whitney Dam** for flood-control and power is expected to be completed in 1952. It is a concrete

dam 167 ft. high flanked by earth fills having a total length of 19,600 ft. Two 15,000-kw. generators will be installed in the power plant.

SOUTH EASTERN STATES—**Jim Woodruff Dam** is being built by the Army Engineers on the Georgia-Florida border at the point where the Chattahooche and Flint rivers join to form the Apalachicola River. It is for power and navigation. The main dam is of concrete flanked by a navigation lock and long earth fill on one side and a powerhouse on the other, the latter to accommodate three 10,000-kw. units. The overflow dam is 79 percent complete. Bids on the lock and fixed-crest spillway will be called this spring. Construction is expected to take five years and cost $42,000,000.

Allatoona Dam, the initial project for development of the Alabama-Coosa River system, is for flood protection at Rome, Ga., and to increase the low flow of the Coosa River for power. It is a concrete structure, 200 ft. high and 1,250 ft. long, with a powerhouse containing two 36,000 kw. generators. Work started in 1946 under a $13,282,000 contract and was 65 percent complete at the end of 1948.

On the Savannah River 22 miles from Augusta, Ga., the Corps of Engineers has started work on **Clark Hill Dam**, a power, flood-control and navigation supply project. The main dam will be 200 ft. high, requiring 1,000,000 cu. yd. of concrete. It will be flanked by long earth fills. The power house will contain ultimately seven 40,000 kw. generators. Embankments are completed. About 15 percent of the main dam is up, under a $26,456,000 contract, which does not include the power plant.

In the Roanoke River valley in Virginia the Corps is building **Buggs Island Dam**, a $78,400,000 project for flood control, navigation and power. The main structure will be of concrete 144 ft. high and 2,785 ft. long flanked by 19,600 ft. of rolled fill. A $13,363,000 contract for the concrete dam and powerhouse was let last April and concrete placing will start this spring with completion set for late in 1951.

TENNESSEE VALLEY—**Watauga Dam** on the Watauga River, a tributary of the Tennessee, a 318-ft. high earth and rock fill was substantially completed by the Tennessee Valley Authority at the end of the year. Two 25,000-kw. generators being installed in the powerplant will be in operation this summer. **Wilbur Dam** below Watauga is being rehabilitated and a 7,000-kw. unit added.

AT SUNBURY, PA., over 12,000 ft. of concrete flood wall is being built to keep the Susquehanna River out of the city.

Work on **South Holston Dam** on the same river system, which was suspended after the war, was resumed in 1948. It is an earth and rock-fill structure scheduled for completion in 1950. One 35,000 kw. unit will be installed.

The Tennessee Valley Authority is installing eleven additional hydro units in existing plants, totaling 320,000 kw. Four of these units are already on the line.

SUSQUEHANNA BASIN—At the headwaters of the Susquehanna River two flood-control reservoirs are under construction by the Corps of Engineers. **East Sidney Reservoir** on Oaleout Creek near East Sidney, N. Y., made up of 750 ft. of concrete dam 128 ft. high and 1,250 ft. of rolled embankment, begun in 1947, is 52 percent complete. It will cost $6,900,000. **Almond Reservoir** on Canacadea Creek near Hornell, N. Y., begun in 1946 is 80 percent complete. It is a rolled fill 90 ft. high and 1,350 ft. long with concrete spillway and outlet works, costing $6,000,000.

At **Williamsport**, Pa., on the West Branch of the Susquehanna River and along Lycoming Creek levees and flood wall are being built at a cost of $17,000,000. Included are 60,000 ft. of levee, 9,600 ft. of concrete flood wall, 9 pumping stations and a concrete pressure conduit 1,900 ft. long. Work now under way now totals $4,750,000, including a pumping station of 450,000 g.p.m. capacity. On the main river at **Sunbury**, Pa., where Shamokin Creek enters it, the Corps of Engineers is building 14,000 ft. of earth levee, 4,100 ft. of T-type and 8,100 ft. of I-type concrete flood wall, 5 pumping stations and 12,700 ft. of interceptor sewers, costing the federal government $7,300,000. The project is 45 percent complete. Along the Chemung River, another tributary, at **Elmira**, N. Y., 62,800 ft. of earth levee, 11,000 ft. of concrete wall, 6,000 ft. of intercepting sewer, a pumping station and pressure conduit 2,160 ft. long, all estimated to cost $7,100,000 are 79 percent complete.

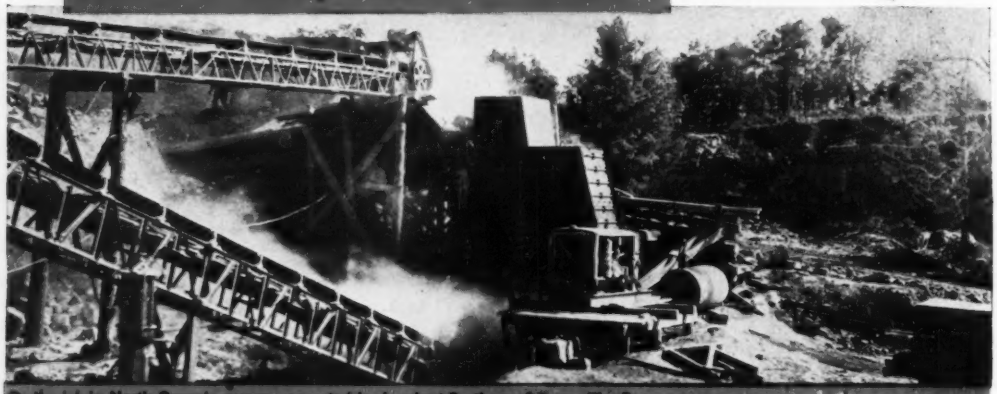
GENESEE RIVER—**Mt. Morris Dam** is being built by the Corps of Engineers on the Genesee River above Rochester, N. Y., for flood control. It is a concrete structure 216 ft. high and 550 ft. long, estimated to cost $24,400,000. Work started in March, 1948, and is scheduled for completion in June 1952.

NEW ENGLAND FLOOD CONTROL—For control of floods in the Connecticut River valley the Corps of Engineers is building two of the several proposed reservoirs. **Union Village Dam** on a tributary in central Vermont, an earthfill 170 ft. high and 1,100 ft. long, is about 75 percent complete under a $3,200,000 contract. On another tributary in northern Massachusetts is **Tully Dam**, an earthfill 62 ft. high and 1,570 ft. long. There a $765,000 contract is 90 percent complete.

For control of floods on the Merrimack River, **West Peterborough Dam** is being built on a tributary. It also is of rolled earth construction 67 ft. high and 1,000 ft. long. A $1,170,000 contract is 30 percent complete.

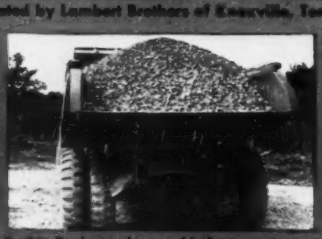
In Georgia limestone . . .

Dual Impact Action does it again



On the job in North Georgia quarry, operated by Lambert Brothers of Knoxville, Tenn.

From this New Holland Model 5050 Breaker . . .



. . . comes run-of-quarry rock up to 50" . . .

. . . to this! Produces clean, cubical aggregate passing -4" in one operation . . .

New Holland Model 5050 Double Impeller Breaker

reduces 50" material to commercial sizes in single pass . . .

• **Like all New Holland Breakers,** the new Model 5050, recently installed by Lambert Brothers, is a field development . . . designed to work in all types of rock, under all conditions . . . built to produce maximum aggregate at minimum cost. Simple, sturdy construction keeps costs *down*—production *up*.

Here are some quick facts—more on request:
Produces up to 400 tons per hour on 300 h.p. Heavy duty steel outer plates. Interior lined with manganese steel wear plates. Spherical roller bearings. All parts accessible; all adjustments easily made by average workman. Mounted on heavy I-beams to simplify installation. Weight 54 tons.

New Holland Double Impeller Breakers are used, recommended by operators everywhere. Get the facts. Write for complete information including location of installation nearest you. Address: Department E-39.

Read what W. E. Lambert, of Lambert Brothers, Knoxville, Tenn., says about New Holland Model 5050 Double Impeller Breaker shown above.

"The ability of this breaker to reduce 50" material to commercial sizes in one pass is remarkable . . ."

W. E. Lambert

NEW HOLLAND DOUBLE IMPELLER BREAKERS

NEW HOLLAND MANUFACTURING COMPANY, MOUNTVILLE, PA.

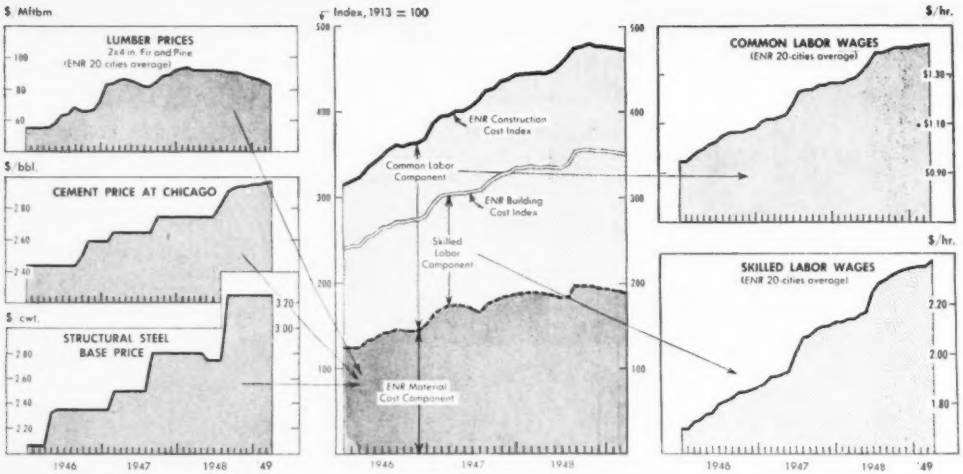
Affiliate of the Sperry Corp.

ENGINEERING NEWS-RECORD

Construction Costs

1949 Edition

Highlights of Construction Costs, 1949	160
Construction and Building Cost Indexes ..... Insert, 161, 163, 165,	167
ENR Construction and Building Cost Index ..... Insert,	163
Roadbuilding Price Index	167
California Studies Highway Costs, Index	169
Installed Equipment Cost Index, Marshall & Stevens	161
Prices of Construction Materials	171
Construction Wage Rates 173, 174,	177
Productivity of Labor Increases Slowly	179
Compensation Insurance, Base Rates	183
Cost of Financing	185
Depreciation Schedules, Buildings and Equipment	187
Construction Equipment Depreciation, Ownership Expense, Rental	189
Unit Prices for Payment Purposes, Fresno Hospital	191
Unit Prices Compared for 29 VA Hospitals	193
Postwar Price Experience on Dams, Indexes	199
Unit Prices, New York City Housing Authority	203
Unit Prices bid on Highway Contracts	207



HIGHLIGHTS OF . . .

CONSTRUCTION COSTS—1949

It may be stated with some certainty that 1948 witnessed the turning point in the post war construction price rise. As to wages, the signs are not so clear, but the pressures supporting a fourth round are greatly reduced. If increases come they should be smaller than in previous rounds, and offset by improved productivity.

Lumber held the spotlight all year. Having led the climb up, it started down in March after hitting a record high in February of $93.54 (ENR 20-cities average for 2x4 s4s No. 2 Common). After moving down to $91.55 by May it backed up slightly through July, then in August started the 8-month, slow but steady decline to this month's price of $83.51. This was accompanied by production exceeding shipments and an accumulation of stocks. The March price is 11 percent below the record February high of a year ago, and further declines are expected.

Cement and steel both made history in 1948 by going off the basing point system following the Supreme Court in the cement case.

The cement price average, $2.96, (ENR 20-cities) increased 8¼ percent during the year, but changes varied across the country according to location of market with respect to plants and degree of freight absorption that had previously prevailed. Since the price raises became effective in July and August they have remained fairly stable. The only reductions have been in Boston, from $3.65 in August to $3.44 in March, '49, and in Chicago, from $3.00 in October and November to $2.59 in December. This has held through March.

Steel started the year at an average of $2.80 (average price at three mills). In May this dropped to $2.75, but coincident with going off basing point pricing this average went up to $3.25 per cwt. Steel scrap prices broke sharply in early 1949, and steel production improved. The black and grey markets petered out and even pipe supplies improved.

Common labor wages increased 11 percent during 1948, 12 percent in the 15-months through March, 1949 to $1.424 for the ENR average.

Skilled labor wages went up 10 percent for the year, 11 percent during the 15-months ending in March, '49 to $2.376 for the ENR 20-cities average.

Construction costs, controlled largely by these dominant elements of construction, climbed to their peak in the third quarter and started down gently in the fourth. The ENR Construction Cost Index topped-out at 480 in October, 9 percent above its December, 1947 value, then backed down to 478 in December, 1948, 7.5 percent above the previous December. It has continued down a little each month to 474.8 in March, 7.5 percent above the close of 1947.

The ENR Building Cost Index, too, responded to the drop in lumber prices with a slow but steady decline starting in November, 1948. The October peak of 357 is a rise of 7 percent over the previous December. This moved down slowly to 356 in December '48 and to 352 by March 1949, only 5.5 percent above December 1947.

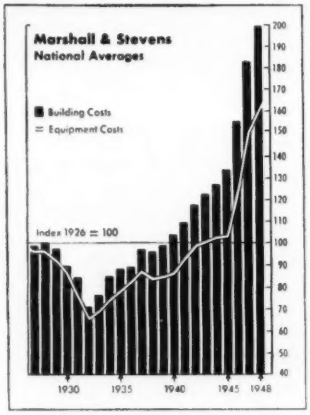
Other cost indexes are similarly leveling off or moving down. American Appraisal hit its high in October, 1948 at 504, and backed down to 501 by December. Boeckh topped-off at 391 in October and November, then moved down to 390 in December. Aberthaw, reporting quarterly, reached its high in September at 327, and retreated to 323 in December. Turner held at 430 from October through December, and dropped back to 427 in February.

Labor productivity improved slowly but steadily. In September skilled labor had moved up to 73 percent of 1939 standards, and common labor productivity went up to 82 percent. These are the medians of productivity reported by contractors to *Engineering News-Record*, all computed on the same formula and reported in detail in the following pages.

Better construction productivity was evident, too, in prices bid by contractors.

Equipment Costs Indexes—1926=100

Compiled and published by MARSHALL AND STEVENS, Chicago, Illinois



Industry	1929	1932	1939	1942	1945	1946	1947	1948	12/'48
Average of All	**91.9**	**66.1**	**84.8**	**99.6**	**103.4**	**123.2**	**150.6**	**162.8**	**166.0**
Commercial (Aver. of 12*)	91.8	67.6	86.8	101.9	105.2	120.9	146.9	158.6	160.3
Transportation—Garage	91.5	69.2	83.6	96.9	100.9	123.9	157.0	171.1	175.8
Public Utility (Aver. of 2*)	91.8	70.1	82.9	94.3	97.5	119.5	145.8	159.6	162.9
Process (Aver. of 9*)	90.5	73.2	83.6	99.2	103.8	123.0	149.1	161.9	165.2
Food (Aver. of 10*)	92.6	68.5	84.9	98.5	104.1	126.1	156.8	169.7	173.7
Metal Working	92.3	67.9	83.6	109.5	110.7	131.2	151.3	161.8	165.1
Aircraft	93.0	66.7	85.0	106.4	109.8	127.9	162.9	178.3	183.0
Mach. and Parts, Elec. Equip	92.0	68.0	83.4	103.1	106.8	130.3	156.6	167.4	170.7
Textile	91.1	67.8	83.7	99.1	101.8	122.1	146.6	157.4	160.7
Woodworking	92.0	67.2	83.6	97.0	100.9	123.0	149.6	160.4	163.7
General (Aver. of 7*)	95.5	68.8	84.6	99.5	103.2	122.0	149.7	162.0	165.5
Cold Storage—Refrigerating	92.0	70.0	82.1	95.8	101.7	125.7	163.2	176.6	181.3
Contractors' Equipment	91.0	71.9	82.4	100.8	102.5	124.2	150.3	161.1	164.4

MARSHALL AND STEVENS INDEXES cover both comparative building costs, 1902 to date, and comparative equipment costs, 1913 to date. The building indexes are national averages with a system of modifiers to get regional and municipal values for each of four types of building. A. Fireproof, protected steel, B. Fireproof, reinforced concrete, C. Masonry buildings, D. Frame. They are designed to reflect normal costs in line with recognized or published prices of building materials, equipment and labor. Extraordinary or intangible conditions are not included. Composite building cost series converted to 1913 = 100 is shown on chart insert.

Comparative equipment costs, developed to cover the composite of the entire plant, machinery of various kinds, mechanical installation, furniture and fixtures, hand tools and other and combined in proper proportion to their average occurrence in each plant are computed for 47 industries. Eleven series are reproduced here, five of which are averages of 3 or more M&S related series). These are M&S estimates of actual costs paid for installed plant equipment, as a whole.

* In each of these categories, MARSHALL AND STEVENS report separate comparative equipment cost trends for:

COMMERCIAL: Apartment, Bank, Church, Hotel, Library, Restaurant, School, Store, Theatre, Hospital, Dwelling, Office

PUBLIC UTILITY: Steam Power, Electric Power

PROCESS: Distillery, Cement, Chemical, Glass, Petroleum Industry, Paint, Paper, Rubber, Clay Products

FOOD: Bakery, Bottling, Brewery, Candy, Cannery-fish, Cannery-fruit, Creamery, Dairy, (Flour, cereal feed), Packing-fruit, Packing-meat

GENERAL: Laundry, Mining and Milling, Motion Picture, Printing, Shipbuilding, Warehouses, Logging

Building Cost Indexes—1913=100

Two types of building cost indexes are represented in the colored chart facing this page, 1. weighted indexes and 2. contractor indexes based on repricing the same structure at periodic intervals. Details on individual indexes follow: All use 1913 = 100 as base except Aberthaw & Austin.

AMERICAN APPRAISAL COMPANY—based on detailed analysis of materials and labor required for representative types of industrial building structures, repriced monthly in accordance with 1. prevailing wage scales and labor performance for the various building trades, and 2. quotations for construction materials in 30 key cities in the United States. The index assumes normal average conditions and does not give any recognition to overtime or bonus payments to labor or premiums paid for materials in individual cases or under temporary abnormal conditions. Applies to construction only, does not include factors for building fixtures and decorations. Oct. '48 value 504; Dec. '48, 501.

American Appraisal Cost Index

	'26	'32	'39	'42	'45	'46	'47	'48
				30 cities				
U. S. Average	**217**	**155**	**200**	**241**	**271**	**322**	**430**	**490**
Boston	224	169	210	248	270	320	420	477
New York	234	170	219	248	272	327	441	508
Buffalo	219	157	205	247	279	328	440	503
Baltimore	224	166	198	248	277	335	445	507
Philadelphia	225	161	196	247	275	317	417	477
Pittsburgh	236	172	219	249	279	325	424	486
Cincinnati	217	157	209	242	272	317	422	483
Cleveland	233	160	206	245	298	319	431	494
Chicago	219	162	205	255	290	303	404	456
Indianapolis	219	157	205	247	276	327	440	501
Detroit	224	148	207	252	278	335	441	504
Milwaukee	218	144	209	254	280	328	437	499
Minneapolis	197	148	202	235	266	310	401	455
Kansas City	220	156	209	239	268	321	423	480
St. Louis	230	163	207	238	265	314	422	478
Atlanta	211	147	187	240	278	344	457	521
Dallas	204	146	171	209	246	291	397	451
New Orleans	217	145	194	234	277	324	429	493
Denver	204	149	195	226	245	297	393	443
Seattle	199	141	195	244	277	324	443	506
San Francisco	188	144	180	225	244	297	401	446
Los Angeles	195	141	167	213	249	307	422	473

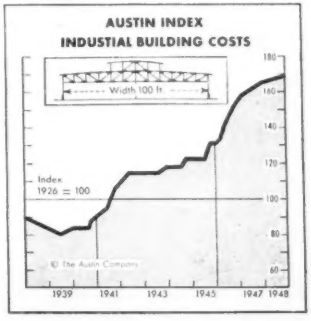
ASSOCIATED GENERAL CONTRACTORS OF AMERICA (AGC)—Wages and materials for 12 cities combined in 40-60 ratio. Wages, prevailing rates for hod carriers and common labor. Materials, weighted: sand, gravel and crushed stone, 1; cement, 1; lumber, 1; hollow tile, ½; structural and reinforcing steel, ½. Dec. '48 value 341.

FRUIN-COLNON CONTRACTING CO.—Industrial plant of five buildings in St. Louis repriced on basis of contractor's actual and estimated material and labor costs. Dec. '48 value 391.

GEORGE A. FULLER COMPANY—Composite of 36 major cost elements, in three commercial type buildings, including mechanicals, elevators, wiring, heating and ventilating, repriced. Jan. '49 value 390.

TURNER CONSTRUCTION COMPANY—Eastern cities. Own building cost experience applied to these factors: labor rates, material prices, productivity of labor, efficiency of plant and management, competitive conditions, forecast of price trends. Dec. '48 value 430, Feb. '49, 427.

AUSTIN COMPANY INDUSTRIAL BUILDING COST—Reprices typical one-story, steel frame, monitor type industrial building at regular intervals. Structure has concrete foundations; brick curtain walls; continuous steel sash; concrete floor laid on ground; 2-in. wood roof deck on timber purlins covered with 4-ply waterproofing. Monitor sash equipped with mechanical operators. Heating, lighting, plumbing, sprinkler systems and other building services not included. Pricing at representative points in central and eastern states.



ENGINEERING NEWS-RECORD CONSTRUCTIO

The Engineering News-Record Construction and Building Cost Indexes reflect wage rate and material price trends. They do not adjust for labor efficiency, materials availability, competitive conditions, management, mechanization or other "intangibles" affecting construction costs.

A hypothetical cube of construction requiring 6 bbls. of cement, 1.088 M ft. bm. of lumber, 2,500 lbs. of steel and 200 hours of common labor is used to measure the trend of the cost of heavy engineering construction.

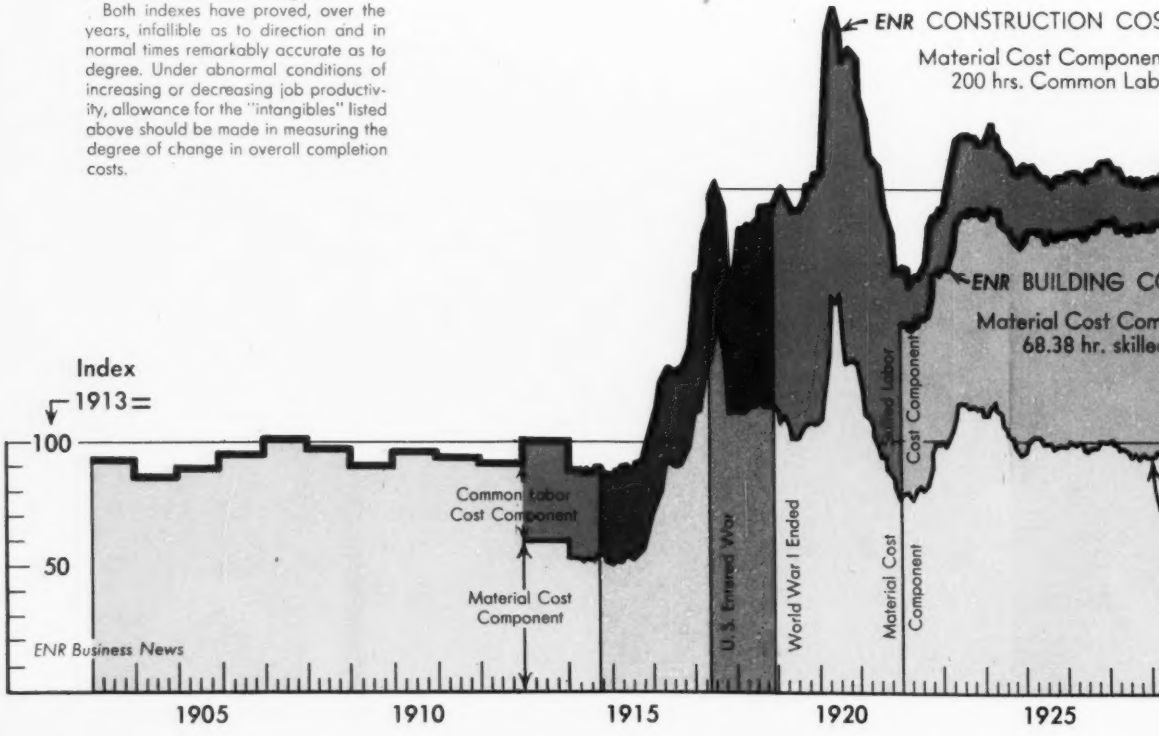
The building cost index is based on a similar hypothetical cube using the same quantities of materials, but 68.38 hours of skilled labor.

This simple structure was adopted to facilitate prompt reporting of changes due to price and wage rate movements, both as to direction and degree.

Both indexes have proved, over the years, infallible as to direction and in normal times remarkably accurate as to degree. Under abnormal conditions of increasing or decreasing job productivity, allowance for the "intangibles" listed above should be made in measuring the degree of change in overall completion costs.

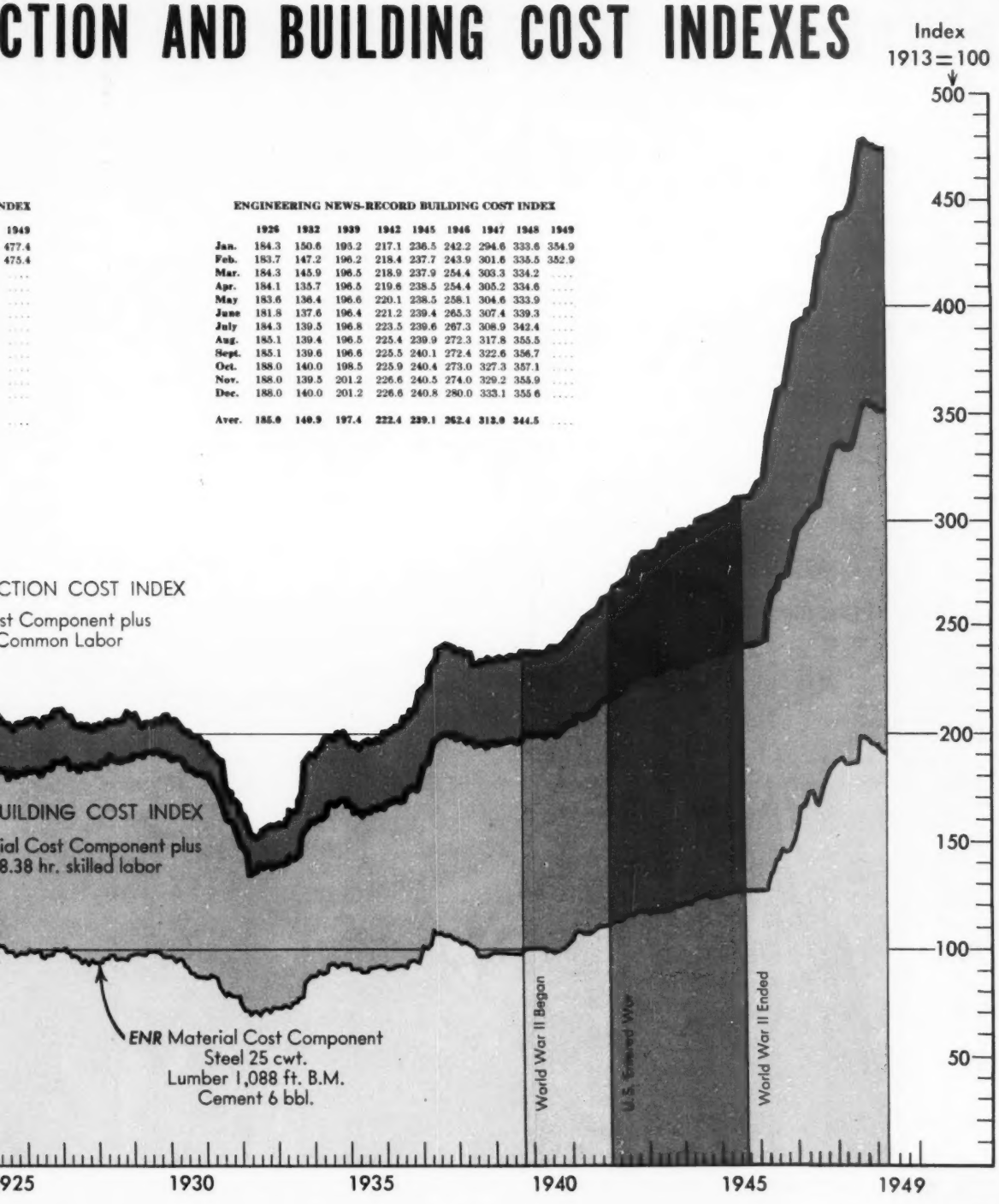
ENGINEERING NEWS-RECORD CONSTRUCTION COST INDEX

	1926	1932	1939	1942	1945	1946	1947	1948	1949
Jan.	207.2	162.5	234.7	267.6	302.5	316.3	387.0	441.7	477.4
Feb.	206.6	161.8	234.3	269.4	303.7	319.5	393.7	442.7	475.4
Mar.	207.7	157.2	234.4	269.7	304.5	323.8	395.5	443.6	....
Apr.	207.1	153.1	234.9	271.8	306.4	334.6	399.7	443.6	....
May	207.3	152.8	234.7	272.3	307.4	340.5	400.0	444.9	....
June	204.8	152.2	235.0	274.2	309.0	348.7	406.6	455.8	....
July	207.8	153.4	234.9	277.7	309.0	354.7	413.8	464.8	....
Aug.	208.3	156.8	234.9	281.6	309.1	361.4	422.9	477.1	....
Sept.	208.3	158.0	235.0	281.6	309.3	360.2	426.4	478.4	....
Oct.	209.8	159.2	236.9	282.4	309.3	360.9	434.6	480.2	....
Nov.	210.8	158.2	238.2	283.6	309.3	362.5	436.9	478.3	....
Dec.	210.8	158.5	238.2	283.7	313.5	369.3	441.1	477.7	....
Aver.	208.0	157.0	235.5	276.3	307.8	346.0	413.2	460.7	....



Reprints of this chart are available from Engineering News-Record offices, 330 W. 42 St., New York 18, N. Y., 10¢ per copy.

CTION AND BUILDING COST INDEXES



NDEX

	1949
	477.4
	475.4
	....
	....
	....
	....
	....
	....
	....
	....
	....
	....
	....

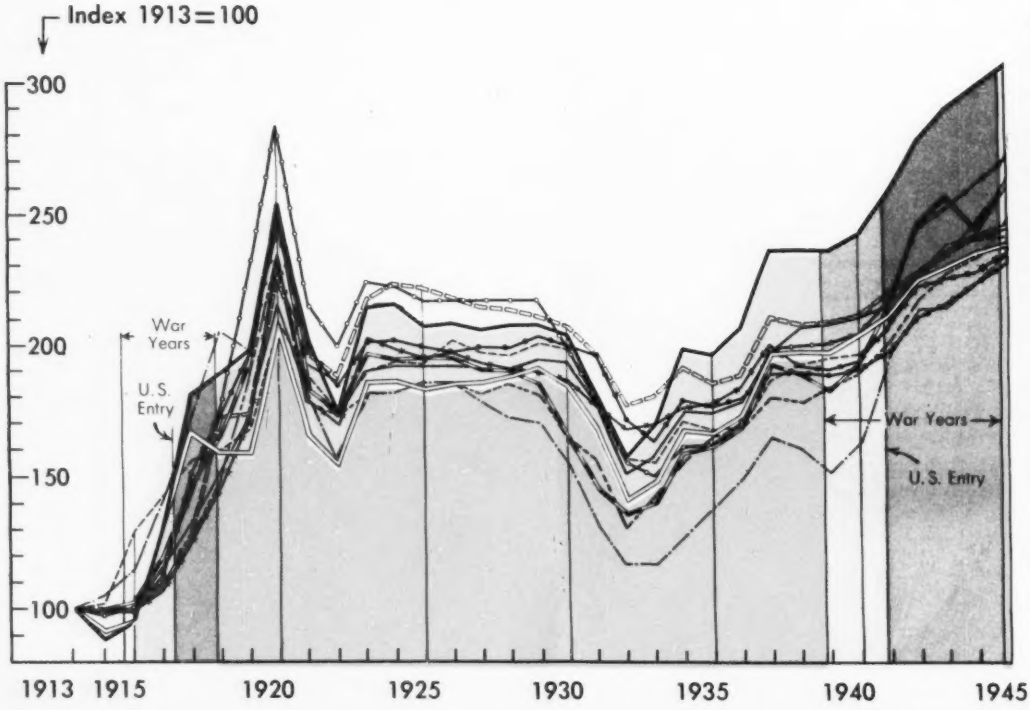
ENGINEERING NEWS-RECORD BUILDING COST INDEX

	1926	1932	1939	1942	1945	1946	1947	1948	1949
Jan.	184.3	150.6	195.2	217.1	236.5	242.2	294.6	333.6	354.9
Feb.	183.7	147.2	196.2	218.4	237.7	243.9	301.6	335.5	352.9
Mar.	184.3	145.9	196.5	218.9	237.9	254.4	303.3	334.2	....
Apr.	184.1	135.7	196.5	219.6	238.5	254.4	305.2	334.6	....
May	183.6	136.4	196.6	220.1	238.5	258.1	304.6	333.9	....
June	181.8	137.6	196.4	221.2	239.4	265.3	307.4	339.3	....
July	184.3	139.5	196.8	223.5	239.6	267.3	308.9	342.4	....
Aug.	185.1	139.4	196.5	225.4	239.9	272.3	317.8	355.5	....
Sept.	185.1	139.6	196.6	225.5	240.1	272.4	322.6	356.7	....
Oct.	188.0	140.0	198.5	225.9	240.4	273.0	327.3	357.1	....
Nov.	188.0	139.5	201.2	226.6	240.5	274.0	329.2	355.9	....
Dec.	188.0	140.0	201.2	226.6	240.8	280.0	333.1	355.6	....
Aver.	185.0	140.9	197.4	222.4	239.1	262.4	313.0	344.5	....

© Engineering News-Record

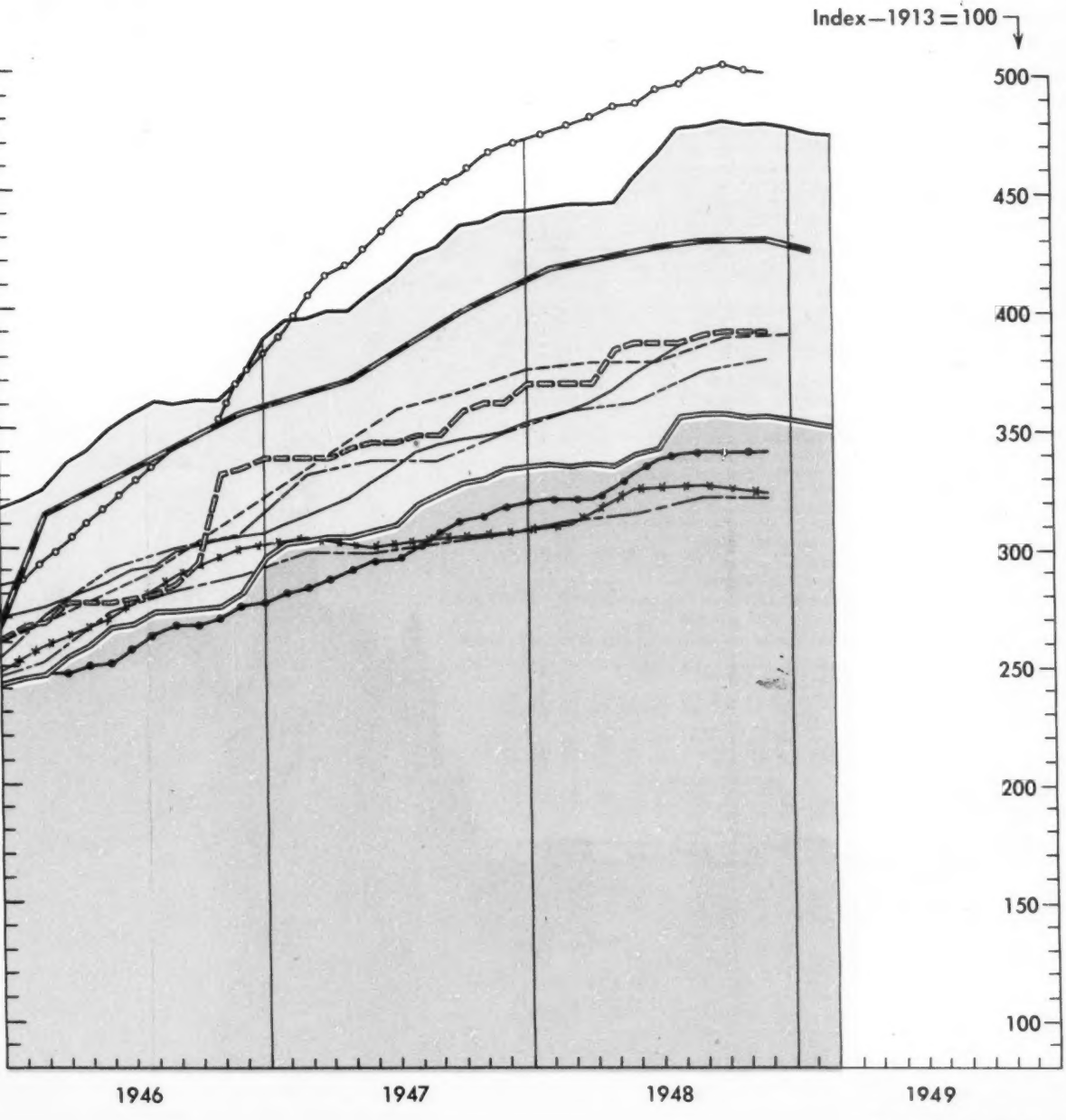
BUILDING AND CONSTRUCTION COST INDEX

	1948	1947	1946	1945	1942	1939	1932	1926
Weighted Indexes								
ENR Construction	461	413	346	308	276	236	157	208
ENR Building	345	313	262	239	222	197	141	185
American Appraisal	490	430	322	271	241	200	155	217
Assoc. Gen. Contr.	332	296	257	231	209	188	171	197
Boeckh, U. S. aver.	374	329	286	261	226	208	152	193
Marshall & Stevens	368	338	288	248	218	183	130	185
Contractor Indexes								
Aberthaw (1914 = 100)	321	304	279	236	223	190	168	197
Austin	317	301	273	234	213	152	117	185
Fruin-Colnon	382	347	285	247	227	208	178	218
Fuller	380	354	290	241	229	195	157	202
Turner	422	380	318	263	245	182	136	195



Reprints of this chart are available from Engineering News-Record offices, 330 W. 42 St., New York 18, N. Y., 10¢ per copy.

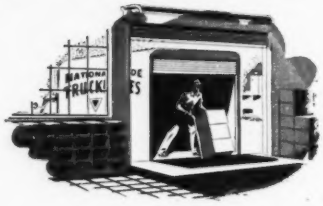
NDEXES COMPARED



© Engineering News-Record

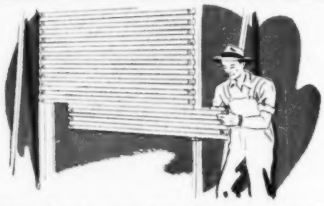
STOP EFFICIENCY LOSS at DOORWAYS...

Kinnear Rolling Doors open smoothly, quickly and easily upward, avoiding all ground obstructions and leaving the entire opening clear.



Coiling compactly above the lintel, Kinnear Doors leave **all** floor and wall space fully usable at all times.

Kinnear's all-metal curtain of sturdy interlocking slats provides a strong barrier against winds and storms.



Rugged, simplified design makes Kinnear Doors easy to install in any opening. Accidental damage can be repaired at lowest cost.

...with KINNEAR STEEL ROLLING DOORS

One of the big factors in rapid, low-cost cargo handling is efficient use of all floor and wall areas around pier and transit shed doorways. Kinnear Rolling Doors are the choice answer to pressing demands for quick, easy, space-saving action in big and little piers alike, the world over.

Kinnear Rolling Doors combine the smooth efficiency of *coiling upward action* with the resilient strength of *interlocking steel slat construction.* They rise vertically and roll compactly above the lintel, out of reach of damage from wind or vehicles. Door openings stay *completely* clear for free flow of pier traffic. All surrounding floor and wall areas remain usable for cargo storage and handling. When closed, the doors form a sturdy steel barrier against fire, theft, intrusion, and weather.

In every detail, Kinnear Doors are built to assure longer service life at lowest maintenance cost. They are easy to open and close, whether operated by hand, by chain or crank mechanism, or by motor operators controlled by pushbutton from one or more convenient points. Doors available to fit any size opening in new or old buildings. Write us today for details. No obligation.

The KINNEAR MANUFACTURING COMPANY

FACTORIES: 1820-40 Fields Ave., Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, California
Offices and Agents in Principal Cities

SAVING WAYS in DOORWAYS

KINNEAR ROLLING DOORS

Other Bases for Engineering News-Record Cost Indexes

For convenience in comparing cost index rises with prewar conditions the Engineering News-Record Construction and Building Cost Indexes are given here for three bases 1926 = 100, 139 = 100 and 1940 = 100. Many postwar projects had their cost estimates based on 1940 price and wage levels with the proviso that these estimates should be adjusted to future postwar conditions in proportion to the rise in the Engineering News-Record Cost Indexes. This 1940 = 100 base series will aid in making these adjustments.

A partial historical record of the Engineering News-Record Cost Indexes is reported on a preceding page based on 1913 = 100. To convert from this original base year of 1913, on which these indexes are computed, to other bases, the accompanying conversion table can be used.

BASE CONVERSION TABLE

To convert Engineering News-Record Construction and Building Cost Indexes

From Base 1913 = 100 To Base	Divide 1913 = 100 Index Values for Construction Cost Index Divide by	for Building Cost Index Divide by
1940 = 100	2.4196	2.0281
1939 = 100	2.3551	1.9744
1926 = 100	2.0803	1.8499
1929 = 100	2.0702	1.9086
1910–14 = 100	.9380	.9477
1924 = 100	2.1536	1.8578
1923–25 = 100	2.1204	1.8481
1914 = 100	.8856	.9191
1911 = 100	.9343	.9414

Year	ENR Construction Cost Index '26= 100	'39= 100	'40= 100	ENR Building Cost Index '26= 100	'39= 100	'40= 100
BASE						
1926 Aver.	100.0	88.3		100.0	93.6	91.2
1927	99.1	87.5	85.9	100.6	94.4	91.7
1928	99.4	87.8	85.2	101.6	95.2	92.6
1929	99.5	87.9	85.4	103.1	96.6	94.1
1930	97.5	86.1	85.5	100.2	93.9	91.4
1931	87.1	77.0	83.8	91.3	85.7	83.5
1932	75.4	66.6	74.9	75.7	71.3	69.4
1933	81.8	72.2	84.8	79.5	74.8	72.8
1934	93.2	84.1	70.3	90.1	84.4	82.1
1935	94.4	83.4	81.8	89.6	83.9	81.7
1936	99.2	87.6	81.8	93.1	87.2	84.9
1937	112.7	99.6	85.3	106.1	99.3	96.7
1938	113.3	100.1	97.0	106.4	99.6	97.0
1939	113.2	100.0	97.4	106.7	100.0	97.3
1940	116.3	102.7	97.3	109.6	102.7	100.0
1941	124.0	109.4	100.0	114.3	107.1	104.2
1942	132.8	117.3	106.5	120.2	112.6	109.6
1943	139.4	123.1	114.1	123.7	115.8	112.8
1944	143.6	126.8	119.8	126.9	118.8	115.7
1945	147.9	130.6	123.4	129.3	121.1	117.8
1946	166.3	146.9	143.0	141.8	132.9	129.4
1947	198.6	175.4	170.8	169.2	158.5	154.3
1948	221.5	195.6	190.4	186.2	174.5	169.9
1949 Feb.	228.5	201.8	196.5	190.8	178.7	174.0

Public Utility Construction Cost Index

Compiled and published by Whitman, Requardt and Associates, and B. L. Smith & Associates, Baltimore, Md., for the Estate of William W. Handy

Table No. 1 Cost Trends of Building Construction 1911 to 1914 = 100

(Complete Index reports 13 items entering into Building Construction Costs.)

A relates to Reinforced Concrete Bldg.; B relates to Brick Bldg.

	Jan. 1926	July 1926	Jan. 1932	July 1932	Jan. 1939	July 1939	Jan. 1942	July 1942	Jan. 1945	July 1945	Jan. 1946	July 1946	Jan. 1947	July 1947	Jan. 1948	July 1948	Jan. 1949
Atlantic Seaboard Division																	
A	213	213	171	159	205	207	250	253	259	260	271	304	336	353	382	422	436
B	228	229	189	173	211	214	246	250	262	265	276	308	329	351	372	404	429
North Central Division																	
A	203	201	169	154	200	200	237	242	249	253	256	291	326	339	371	409	421
B	212	211	181	164	203	203	229	234	248	250	259	284	310	324	352	375	389
South Central Division																	
A	192	191	149	144	188	187	232	236	242	243	249	279	318	334	364	399	411
B	203	204	160	154	191	191	223	227	235	238	244	272	299	322	341	370	382
Plateau Division																	
A	198	197	153	149	194	194	230	235	238	239	248	278	307	327	349	385	402
B	211	210	167	163	199	200	221	227	231	233	257	286	309	331	349	378	396
Pacific Division																	
A	191	190	157	148	192	192	238	241	248	248	251	294	328	343	374	411	416
B	198	197	164	156	193	193	226	231	241	242	245	279	303	329	354	378	386

Table No. 2 Cost Trends of Gas Plant Construction 1911 = 100

(Complete Index reports 17 items entering into Gas Plant Construction Costs.)

A relates to Total Constr. & Equip.; B relates to Mech. Equip. Exclusive of Gas Holders

	Jan. 1926	July 1926	Jan. 1932	July 1932	Jan. 1939	July 1939	Jan. 1942	July 1942	Jan. 1945	July 1945	Jan. 1946	July 1946	Jan. 1947	July 1947	Jan. 1948	July 1948	Jan. 1949
Atlantic Seaboard Division																	
A	230	230	202	188	241	249	272	275	283	288	302	334	366	398	413	446	469
B	212	212	209	195	274	278	297	299	296	301	301	369	387	395	403	424	447
North Central Division																	
A	217	218	198	178	232	232	249	254	264	269	272	308	335	367	384	417	435
B	212	212	209	195	274	278	297	299	296	301	301	369	387	395	403	424	447
South Central Division																	
A	199	200	171	160	216	217	244	249	258	261	266	298	335	359	379	404	420
B	212	212	209	195	274	278	297	299	296	301	301	369	387	395	403	424	447
Plateau Division																	
A	202	202	176	166	216	217	232	237	240	243	255	290	313	344	359	386	403
B	212	212	209	195	274	278	297	299	296	301	301	369	387	395	403	424	447
Pacific Division																	
A	205	206	187	177	227	228	253	257	264	266	271	315	342	369	387	416	433
B	212	212	209	195	274	278	297	299	296	301	301	369	387	395	403	424	447

Table No. 3 Cost Trends of Electric Light and Power Construction 1911 = 100

(Complete Index reports 50 items entering into Electric Light and Power Construction Costs.)

A relates to Total Constr. & Equip.; B to Accessory Electric Equipment† C to Sub-sta. Equip.

	Jan. 1926	July 1926	Jan. 1932	July 1932	Jan. 1939	July 1939	Jan. 1942	July 1942	Jan. 1945	July 1945	Jan. 1946	July 1946	Jan. 1947	July 1947	Jan. 1948	July 1948	Jan. 1949
Atlantic Division																	
A	197	194	182	176	224	225	248	248	251	259	266	303	327	351	357	377	401
B	197	196	192	186	225	224	241	239	226	237	248	278	308	323	323	333	340
C	184	178	172	168	203	203	217	216	207	218	228	252	273	288	288	296	306
North Central Division																	
A	190	187	186	174	219	218	235	238	238	243	245	280	299	324	333	351	375
B	189	188	199	186	224	223	229	231	216	218	222	249	272	289	292	300	309
C	178	171	181	169	203	202	207	209	198	200	204	225	240	257	260	264	278
South Central Division																	
A	184	183	179	171	218	218	245	246	248	251	251	288	310	336	344	365	391
B	187	189	200	190	231	230	250	248	235	235	267	290	311	314	326	341	
C	175	171	181	173	210	209	226	226	217	217	217	243	257	278	281	290	310
Plateau Division																	
A	190	188	177	171	218	219	234	236	238	241	244	282	300	329	334	355	378
B	197	196	194	188	231	232	237	236	225	225	259	279	302	303	315	322	
C	185	177	175	171	209	211	213	212	207	207	207	234	246	269	269	278	289
Pacific Division																	
A	180	178	172	163	216	215	235	242	242	244	244	283	300	332	339	359	383
B	178	177	182	170	222	222	231	240	225	225	225	256	275	303	303	317	328
C	167	161	164	155	203	202	210	219	208	208	208	234	244	272	273	284	298

†*Formerly called "Electric Plant-Steam."*

Individual series for 81 cost elements in three classes of utility construction, for five geographic divisions of the United States are reported. Weighting is based on wide experience in cost analysis of plant and construction. Material prices from Engineering News-Record, Iron Age and various manufacturers; labor rates from utilities, unions and builders' associations.

"Automatic"
FIRE-FOG
• IT BLANKETS • IT ISOLATES • IT QUENCHES •

— a famous member of the "Automatic" Sprinkler Family. Provides adequate protection for quench tank, transformer, oil line and other fires of flammable liquid origin.

IF you're planning new construction or the remodeling of your existing facilities, adequate defense against fire must receive primary consideration. For the very structure of business enterprise is dependent upon continuity, and *fire can destroy that continuity with deliberate suddenness.*

Today's business executives are aware more than ever before of the wisdom of safeguarding lives and property. They, too, are quick to recognize the advantages of "Automatic" Sprinkler protection, industry's most effective weapon against fire . . . and this recognition did not come overnight. It is the result of more than half a century of pioneering and leadership in the design, engineering, and construction of approved fire extinguishing devices and systems which *must* and *do* meet the approval of all leading fire insurance bureaus.

Want further information on automatic sprinkler protection? Your telephone will quickly reach an "Automatic" Sprinkler Engineer located in the principal cities of North and South America, or write "Automatic" Sprinkler Corporation of America, Youngstown 1, Ohio.

"Automatic" Sprinkler devices and systems are listed by Underwriters' Laboratories, Inc., and approved by Factory Mutual Laboratories.

FIRE PROTECTION
DEVELOPMENT ENGINEERING
"Automatic" Sprinkler
MANUFACTURE INSTALLATION
"AUTOMATIC" SPRINKLER CORPORATION OF AMERICA
YOUNGSTOWN 1, OHIO
OFFICES IN PRINCIPAL CITIES OF NORTH and SOUTH AMERICA

Boeckh Index of Construction Costs—U. S. Average, 1926–'29=100

Annual Averages By Cities	Residences		Apartments, Hotels, Office Bldgs.			Commercial & Factory Bldgs.				
			—Brick and—					—Brick and—		
	Frame	Brick	Wood	Conc.	Steel	Frame	Steel	Wood	Steel	Conc.
U. S. AVERAGE										
1926-29	101.4	102.5	102.5	102.8	101.3	102.2	100.8	101.7	102.2	104.6
1939	101.2	104.4	104.1	111.2	109.4	101.3	110.4	105.0	112.1	113.3
1942	120.8	121.3	121.1	121.6	121.1	122.7	119.2	119.0	123.1	123.3
1945	147.7	147.2	147.2	140.5	141.9	151.2	138.4	143.7	142.1	142.4
1946	161.8	161.9	161.7	154.0	154.8	165.6	145.0	158.7	154.8	156.0
1947	196.6	195.1	194.6	177.7	180.3	202.4	165.7	189.0	179.3	179.4
1948	221.4	219.2	218.9	201.0	204.0	228.1	188.1	212.3	202.3	203.9
ATLANTA AREA										
1926-29	82.7	87.0	84.2	83.7	87.0	82.9	94.5	84.7	87.5	86.8
1939	82.8	86.0	86.1	95.1	95.0	80.6	96.2	86.6	94.6	97.4
1942	102.5	102.8	102.8	104.4	105.1	101.1	106.3	101.4	105.1	104.9
1945	133.9	132.1	132.5	123.3	127.0	135.9	120.7	130.1	123.3	122.8
1946	149.2	148.1	148.2	136.8	139.9	151.7	130.0	146.8	135.1	136.4
1947	184.0	180.4	181.4	158.1	164.6	187.5	150.1	174.9	158.0	157.1
1948	202.5	199.2	199.5	178.8	185.8	205.2	173.0	193.1	178.8	178.8
BALTIMORE AREA										
1926-29	107.2	112.0	107.6	100.6	100.7	106.3	95.5	106.8	96.8	101.2
1939	93.5	95.5	95.6	99.3	99.2	94.0	101.7	96.6	101.4	100.2
1942	115.1	115.0	115.1	113.6	113.9	115.9	112.2	114.4	116.6	114.2
1945	147.4	145.8	146.0	134.9	137.1	150.9	129.4	141.9	136.4	135.4
1946	163.1	161.7	162.2	149.1	150.8	167.6	138.9	158.8	150.0	148.2
1947	199.5	197.3	196.9	173.9	177.0	204.4	159.7	193.9	175.0	175.6
1948	221.5	219.5	219.8	196.0	199.7	227.0	181.7	215.6	197.1	199.0
BIRMINGHAM AREA										
1926-29	91.7	96.7	94.1	95.5	96.8	90.2	97.5	94.6	96.3	96.3
1939	87.8	90.0	91.5	96.1	96.2	84.9	96.9	93.1	95.6	96.3
1942	108.4	110.8	110.6	110.7	111.0	108.7	107.8	111.3	110.6	112.5
1945	135.2	135.1	135.7	127.1	121.1	136.2	120.8	133.5	126.2	127.7
1946	149.3	147.4	147.9	137.3	139.4	149.7	128.1	145.4	135.2	137.4
1947	175.3	174.2	174.1	154.9	159.5	182.6	146.1	167.7	153.7	155.7
1948	199.9	195.1	195.2	174.4	180.5	205.6	171.3	187.6	175.5	175.3
BOSTON AREA										
1926-29	116.3	120.3	115.4	106.2	107.0	118.8	106.3	112.5	108.7	105.8
1939	106.2	110.4	110.1	116.3	113.7	105.7	114.2	111.5	118.2	118.5
1942	128.4	129.4	129.0	124.3	123.6	131.5	120.1	123.7	126.3	126.3
1945	152.5	151.1	150.9	142.1	143.2	157.4	136.7	145.8	144.6	145.0
1946	167.0	166.5	166.0	156.8	156.6	172.1	147.1	161.1	158.5	160.4
1947	203.8	202.5	202.0	182.1	183.8	209.6	166.5	196.4	192.4	185.8
1948	227.5	226.2	225.6	205.3	207.7	234.7	190.0	218.8	207.1	209.7
CHICAGO AREA										
1926-29	109.2	114.2	109.8	113.2	109.1	112.9	105.2	105.9	112.0	116.0
1939	110.6	112.5	111.1	123.6	118.7	114.2	117.6	109.3	122.6	127.6
1942	131.7	130.2	128.9	129.7	127.4	137.7	121.4	122.9	129.2	132.2
1945	156.6	154.0	152.4	147.8	146.1	163.7	135.7	145.2	146.3	151.3
1946	168.3	166.0	164.2	158.9	156.9	168.1	144.5	157.4	157.0	162.8
1947	201.0	198.3	194.4	180.8	180.1	210.5	163.3	185.0	179.6	184.5
1948	224.5	219.9	217.5	201.7	202.0	235.8	183.2	206.4	201.1	205.9
CINCINNATI AREA										
1926-29	100.5	105.0	101.3	101.0	100.2	100.2	99.6	103.1	100.6	101.0
1939	103.3	106.2	105.9	113.9	110.4	103.3	111.7	107.1	113.7	116.5
1942	117.1	118.4	118.1	120.6	118.8	118.5	115.5	116.9	119.9	122.1
1945	151.2	152.1	152.1	142.7	142.8	153.1	132.8	151.7	142.9	145.1
1946	165.6	166.8	166.7	154.5	154.7	167.5	140.7	166.4	154.4	156.1
1947	199.8	199.7	199.4	177.5	179.6	203.9	162.5	196.4	179.6	180.1
1948	222.6	222.0	221.2	201.5	202.5	227.6	184.8	217.5	201.9	203.7
CLEVELAND AREA										
1926-29	107.2	113.4	108.5	111.3	108.3	109.0	103.0	107.2	110.5	114.8
1939	106.2	109.0	109.5	115.3	112.8	107.5	112.9	109.5	117.7	118.0
1942	123.2	125.3	124.7	127.6	124.8	128.1	119.9	123.1	128.0	130.8
1945	154.9	154.7	153.9	148.3	147.3	158.8	136.9	149.6	148.7	151.9
1946	169.2	169.4	168.7	160.2	159.9	174.1	146.4	164.3	161.0	165.9
1947	205.7	203.9	202.7	185.6	185.9	213.4	168.9	193.4	187.3	189.7
1948	229.8	228.2	226.4	209.4	208.7	238.7	189.5	219.6	210.9	214.5
DALLAS AREA										
1926-29	103.1	107.3	103.2	98.9	99.1	103.6	100.5	100.9	99.4	99.7
1939	95.1	95.8	96.7	98.8	100.2	94.8	106.6	96.0	101.9	98.9
1942	117.9	115.9	116.8	110.8	114.5	119.7	118.5	111.3	116.8	109.4
1945	135.8	134.5	134.9	127.4	131.0	138.2	129.3	130.1	130.8	127.9
1946	150.2	148.8	149.4	139.8	144.4	153.5	140.3	144.6	142.5	141.1
1947	188.2	185.4	183.5	165.8	170.4	194.5	162.8	175.5	167.4	162.6
1948	214.5	207.5	207.9	186.7	193.9	224.4	185.4	197.9	189.0	184.0
DENVER AREA										
1926-29	95.0	99.7	95.5	102.4	99.6	95.5	105.5	94.6	101.4	108.0
1939	112.1	112.0	111.2	116.1	114.4	114.3	118.7	109.5	117.0	117.8
1942	121.8	121.8	120.4	122.5	121.9	124.2	125.1	118.7	124.2	124.9
1945	147.6	146.7	147.1	141.1	145.2	152.4	145.8	142.2	147.8	144.4
1946	160.1	160.3	159.4	155.3	157.9	164.0	155.6	156.8	160.0	158.3
1947	194.2	194.7	194.9	180.9	184.0	197.9	176.6	192.0	185.6	183.1
1948	218.1	217.8	217.7	202.7	206.2	223.0	197.9	213.6	206.7	207.0
DETROIT AREA										
1926-29	103.3	108.4	104.3	102.9	102.4	103.7	103.1	103.5	103.3	104.4
1939	98.8	102.7	102.9	108.6	107.5	98.7	108.8	104.2	111.4	110.1
1942	119.0	120.6	120.5	121.3	119.9	120.3	116.3	119.4	122.5	123.1
1945	149.9	149.4	149.7	143.0	144.1	154.3	137.3	145.4	145.8	144.1
1946	165.9	165.9	165.8	157.4	157.7	171.3	147.5	160.9	160.0	159.7
1947	201.2	199.9	199.5	182.3	182.7	208.5	168.3	191.5	186.0	186.1
1948	224.7	223.4	223.0	203.8	205.1	231.5	187.9	215.9	206.5	207.2

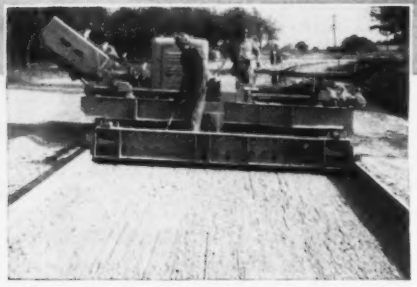
Annual Averages By Cities	Residences		Apartments, Hotels, Office Bldgs.			Commercial & Factory Bldgs.				
			—Brick and—					—Brick and—		
	Frame	Brick	Wood	Conc.	Steel	Frame	Steel	Wood	Steel	Conc.
KANSAS CITY AREA										
1926-29	100.3	106.5	102.2	105.7	103.3	101.1	105.9	101.9	107.5	108.8
1939	104.4	109.9	109.8	118.3	115.4	103.8	117.2	113.0	120.0	121.6
1942	123.1	124.7	125.0	124.6	123.6	124.7	121.7	124.8	127.1	126.5
1945	150.6	148.8	148.7	142.7	144.1	156.5	139.6	143.4	145.4	144.4
1946	166.5	165.6	165.4	158.2	159.5	172.3	151.0	159.8	159.3	160.3
1947	198.6	196.0	195.9	178.4	182.8	205.4	171.1	188.1	182.2	179.6
1948	227.6	224.3	224.4	203.9	209.0	235.9	195.5	214.9	208.2	206.2
LOS ANGELES AREA										
1926-29	92.7	97.9	93.5	98.8	96.8	93.5	97.0	91.3	97.5	103.1
1939	93.6	97.2	97.5	103.7	105.0	95.6	109.5	96.8	106.2	104.9
1942	119.3	115.6	116.1	116.6	119.4	118.3	123.3	112.4	121.3	116.3
1945	139.8	138.3	139.0	134.9	139.4	144.4	140.9	133.3	140.4	135.0
1946	155.1	156.1	156.2	155.3	156.7	160.1	158.3	150.9	160.0	158.7
1947	192.0	190.8	190.9	180.6	184.1	198.1	176.4	183.4	184.8	182.6
1948	216.5	215.9	215.7	205.8	209.5	223.0	199.7	208.2	209.8	210.0
MINNEAPOLIS AREA										
1926-29	92.8	98.2	94.6	95.6	96.1	92.8	100.0	93.9	97.9	98.4
1939	101.9	105.6	104.2	113.5	110.7	102.7	113.4	103.6	114.5	117.2
1942	121.2	121.4	120.6	120.5	120.9	124.5	118.9	116.8	122.7	124.2
1945	140.8	150.9	150.8	141.1	141.2	152.2	132.4	149.4	142.6	143.5
1946	163.7	167.6	167.5	156.5	155.7	164.9	142.6	168.2	157.2	159.5
1947	195.5	195.2	194.8	175.2	178.4	199.8	161.9	190.8	178.2	175.5
1948	223.3	222.1	221.6	200.8	203.9	229.0	186.2	214.9	201.5	204.9
NEW ORLEANS AREA										
1926-29	93.3	96.3	93.4	86.5	90.6	93.3	93.7	91.5	89.5	86.5
1939	89.0	90.3	91.3	95.4	98.3	88.1	102.8	91.7	98.5	94.9
1942	110.6	109.9	110.3	110.7	113.0	114.0	118.8	108.0	114.6	111.2
1945	136.4	134.4	134.5	127.7	131.6	139.1	131.1	130.5	131.6	128.4
1946	148.9	147.4	148.2	138.6	142.8	151.2	138.7	145.4	142.0	138.7
1947	161.9	178.7	179.2	159.2	166.7	186.2	156.4	174.1	162.7	157.4
1948	204.5	200.3	200.5	177.2	184.9	209.5	170.7	194.3	178.7	176.9
PHILADELPHIA AREA										
1926-29	100.3	106.3	103.7	105.9	103.1	98.1	101.9	104.2	104.1	107.5
1939	99.2	102.6	102.9	105.7	104.1	98.2	102.0	105.0	105.5	106.7
1942	121.8	123.5	123.6	123.1	122.0	122.7	116.6	123.0	123.2	125.1
1945	152.1	151.1	151.9	141.9	143.7	155.3	131.8	147.8	141.3	142.7
1946	165.0	163.9	164.9	153.2	154.6	169.0	141.2	161.1	152.7	154.0
1947	201.9	198.6	198.6	176.7	179.8	206.7	161.2	192.3	175.8	176.9
1948	224.5	220.3	220.1	197.9	201.8	230.5	181.0	212.5	196.1	198.1
NEW YORK CITY AREA										
1926-29	133.3	138.4	131.9	122.8	120.4	137.5	113.1	127.4	123.2	125.3
1939	122.1	123.3	122.5	130.6	125.9	125.6	123.7	119.6	130.0	133.3
1942	140.7	139.1	138.2	137.9	135.6	145.0	128.5	132.6	137.1	139.3
1945	161.7	160.5	160.1	156.3	155.9	167.2	144.2	155.0	155.4	158.0
1946	182.4	181.8	181.1	177.2	174.6	188.1	158.6	177.4	174.8	179.0
1947	222.0	219.3	218.1	207.6	205.1	229.8	183.0	211.5	203.8	207.5
1948	251.6	250.1	249.0	239.4	236.8	260.5	212.2	240.7	236.5	242.2
PITTSBURGH AREA										
1926-29	113.2	118.8	112.8	111.2	107.1	115.4	89.6	112.2	104.6	112.9
1939	113.8	117.0	115.7	117.5	114.2	114.2	109.8	116.5	116.9	119.1
1942	132.7	131.1	130.6	126.0	124.4	133.9	115.4	128.6	124.8	127.6
1945	157.6	159.9	155.9	146.1	145.0	161.4	130.3	153.2	143.7	148.0
1946	169.5	169.0	168.0	156.6	155.3	173.5	140.1	166.4	153.2	158.9
1947	206.3	200.6	199.5	180.4	180.8	211.5	160.4	194.0	178.0	181.4
1948	235.2	231.2	229.6	207.3	207.9	243.0	183.2	222.2	203.5	210.1
ST. LOUIS AREA										
1926-29	118.6	121.1	115.7	109.9	108.8	121.8	103.3	111.7	107.7	109.3
1939	107.0	110.2	109.9	118.7	116.4	107.6	114.3	110.3	119.2	119.8
1942	123.3	124.5	124.1	126.9	125.9	126.3	120.9	122.3	126.9	128.6
1945	152.3	152.8	151.4	146.2	146.4	156.2	135.9	148.1	145.6	148.5
1946	167.4	167.1	166.2	159.1	158.9	171.7	145.3	154.8	158.1	161.1
1947	203.8	202.4	200.8	183.9	185.6	209.6	167.0	194.9	184.0	184.2
1948	231.2	227.9	227.2	207.7	210.3	239.7	190.0	220.3	208.1	210.0
SAN FRANCISCO AREA										
1926-29	87.7	93.7	90.4	97.5	96.5	86.1	95.5	95.5	91.8	99.0
1939	99.2	105.7	104.5	117.4	114.4	97.6	114.9	107.4	116.5	121.9
1942	120.1	123.6	123.4	127.5	127.5	121.1	127.2	123.7	130.8	129.3
1945	144.3	146.2	146.8	144.5	146.1	147.2	141.9	145.3	147.9	146.8
1946	157.5	159.7	160.0	157.9	159.0	160.5	151.5	158.4	160.0	159.3
1947	191.6	193.1	193.0	183.7	186.1	196.1	174.8	189.3	203.9	208.9
1948	216.6	218.9	218.7	208.3	210.3	222.2	196.9	216.9	211.2	214.7
SEATTLE AREA										
1926-29	84.5	92.2	89.2	101.7	95.1	82.4	100.8	92.2	100.5	105.3
1939	96.7	104.4	103.8	119.2	114.9	94.4	115.1	108.3	118.7	125.9
1942	121.5	122.7	122.3	131.7	128.6	116.5	129.2	124.2	133.4	136.0
1945	143.7	148.6	148.2	151.7	150.5	143.6	147.0	148.7	154.5	156.8
1946	152.9	158.3	157.9	161.2	159.8	153.2	156.0	158.9	162.2	167.1
1947	188.1	193.1	192.9	188.5	188.8	182.3	177.3	193.1	192.2	193.1
1948	211.4	216.3	216.6	211.5	212.6	214.5	200.9	215.6	216.9	216.6
WASHINGTON, D. C.										
1926-29	106.6	107.7	107.9	107.1	105.9	106.0	104.0	108.0	106.4	108.4
1945	153.4	150.3	151.9	144.4	145.9	157.8	135.9	146.5	144.6	143.5
1946	168.5	166.2	167.1	157.1	158.2	173.6	145.2	162.8	157.2	156.6
1947	204.2	200.0	200.0	178.9	182.9	210.3	166.9	193.7	181.0	188.9
1948	225.3	221.2	221.2	199.7	203.2	231.8	186.0	213.0	200.1	199.5

Reproduced by permission of E. H. Boeckh & Associates, Inc., Consulting Valuation Engineers, 1406 M. Street, N. W., Washington, D. C. See page 92, Apr. 27, 1939 issue for 1913-1938 data of series for Atlanta, New York, St. Louis and San Francisco.

Current indexes are calculated upon an actual survey at source of local construction cost conditions. Material prices used are those paid by contractors to material dealers. Labor rates are current rates paid by contractors—certain corrections being made in certain areas for labor efficiency and labor shortage. Index includes construction overhead, sales taxes, compensation insurance and social security. The indexes have been primarily engineered to use as local cost conversion factors to construction cost data released by the Boeckh organization. Complete index formula is available in published form in "Boeckh's Index Calculator Tables".

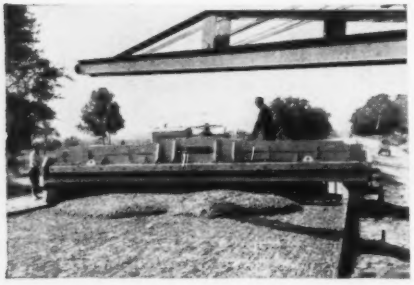
NOW from ONE source

Everything you need for Lowest Cost Concrete Construction

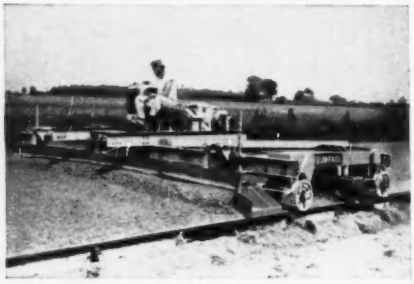


BLAW-KNOX PRECISION SUBGRADER is the only machine that will produce a perfect grade, true to crown and cross-section, through the hardest material without transmitting any shock or movement into the subgrader or road forms.

MULTIFOOTE Paving Mixer with the Elevating Boom is a dual-purpose, high-speed concrete construction tool that will eliminate extra equipment and high costs in the pouring of forms or give you big capacity for pavement too, without making any changes.



BLAW-KNOX CONCRETE PAVING SPREADER with its Automatic Transverse Blade will spread the harsh, dry mixes of two 34-E dual drum pavers no matter where the concrete is placed on the subgrade between the forms.



BLAW-KNOX FINISHING MACHINE will give you record-smashing production and highest quality of finish of concrete pavement regardless of type of mix. Vibratory attachment assures added compaction and still smoother finish.

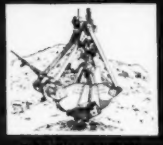
STEEL STREET FORMS

PAVING FORMS

TRUCK MIXER

BULK CEMENT PLANTS

AGGREGATE BATCHING PLANTS



CLAMSHELL BUCKETS

and for BLACK-TOP too!

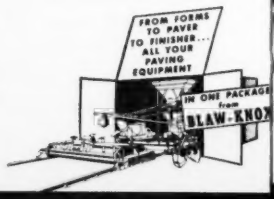
For a complete outfit that will give you better paving with the fewest men at lowest cost in the shortest time—standardize on BLAW-KNOX. One manufacturer and one responsibility for quality, performance and low cost.

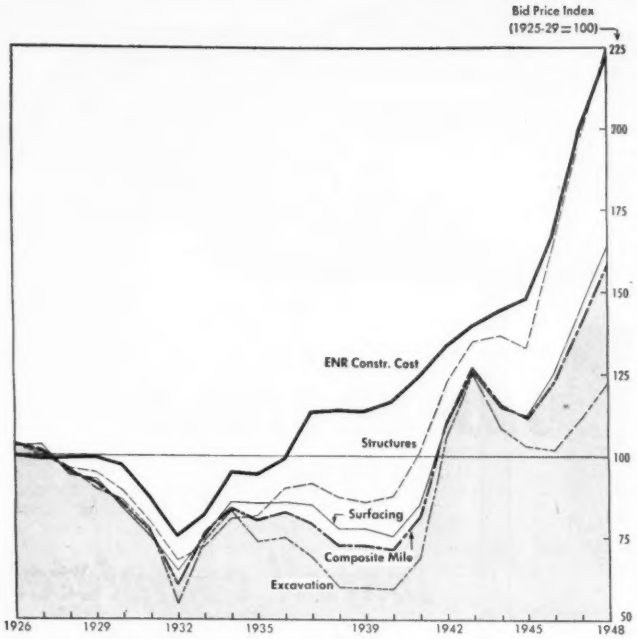
THE ADNUN BLACK TOP PAVER, also a Blaw-Knox Product, will lay all types of black top mixes at big volume rates and in addition give you all these extra profitable job possibilities: laying stone, slag or gravel courses, laying soil cement and all types of built-up subgrade material.

BLAW-KNOX

BLAW-KNOX DIVISION of BLAW-KNOX COMPANY
2052 Farmers Bank Building
Pittsburgh 22, Pa.

THE FOOTE CO., INC.
Subsidiary of Blaw-Knox Company
Nunda, N. Y.





Roadbuilding Price Trends

The index of bid prices on a standard composite mile of highway, rose to an all time high in 1948, of 158.2, 12.6 percent above the 1947 average.

The Public Roads Administration Index, based on contractor's bids, shows that of the three components of highway construction, steel and concrete structures have gone up the most this year, 13.7 percent.

Surfacing costs are up 13.6 percent from 1947, and excavation costs have risen only 10.2 percent during the year.

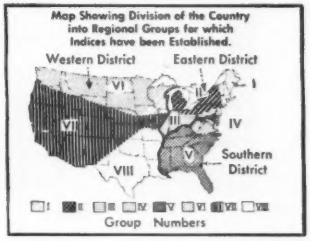
Public Roads Administration Price Trend in Highway Construction for Composite Standard Mile

Year	Excavation[1] (17,491* cubic yards)		Surfacing[2] (3,726* square yards)		Structures				Composite mile
					Reinforcing steel (16,000* pounds)	Structural steel (4,325* pounds)	Structural concrete (68* cubic yards)	Combined	
	Bid price[3]	Sub-index	Bid price[3]	Sub-index	Bid price[3]	Bid price[3]	Bid price[3]	Sub-index	Index[3]
Base period, 1925 to 1929	$0.35†	100.0	$2.22†	100.0	$0.052†	$0.067†	$22.15†	100.0	100.0
1926	.36	103.7	2.29	103.1	.053	.074	22.76	103.7	103.4
1932	.18	55.0	1.44	64.8	.034	.046	15.33	68.0	61.0
1939	.21	59.8	1.73	77.8	.044	.059	19.13	85.9	72.6
1942	.37	105.5	2.44	109.7	.065	.090	26.16	122.3	109.9
1945	.36	102.6	2.48	111.8	.062	.077	31.62	132.5	111.7
1946	.36	101.9	2.78	125.3	.075	.113	38.79	164.7	122.9
1947	.39	111.2	3.20	144.2	.093	.132	43.84	196.9	140.4
1948	.43	122.5	3.63	163.8	.108	.158	51.00	223.9	158.2
1st Quarter	.43	122.5	3.34	150.6	.100	.145	50.46	215.7	150.5
2nd Quarter	.43	122.5	3.56	160.5	.106	.158	49.74	219.7	155.9
3rd Quarter	.44	125.4	3.71	167.3	.109	.159	50.89	224.6	161.0
4th Quarter	.42	119.7	3.92	176.7	.116	.169	52.89	235.7	165.3

[1] Common excavation plus other excavation items expressed as equivalent common excavation.
[2] Portland-cement concrete plus other surfacing items expressed as equivalent portland-cement concrete.
[3] Indexes and totals were calculated with the bid prices carried to one more decimal place than that to which they are shown in this table.
Column showing amount of bid price times fixed quantity omitted in this table.
* Fixed quantities used for establishing composite mile for price trend.
† Fixed prices used for establishing composite mile index base.

Railroad Cost Indexes

Railroad Construction Cost Indexes released August 1, 1948 by Engineering Section, Bureau of Valuation, Interstate Commerce Commission, include items developed from analysis of major construction contracts over a period of 30 years. Indexes for material accounts are based on studies of carriers' returns to Valuation Order 14, joint studies made with various sub-committees of President's Conference Committee, well-known engineering and trade publications, contracts covering major construction projects and other information furnished by individual carriers.



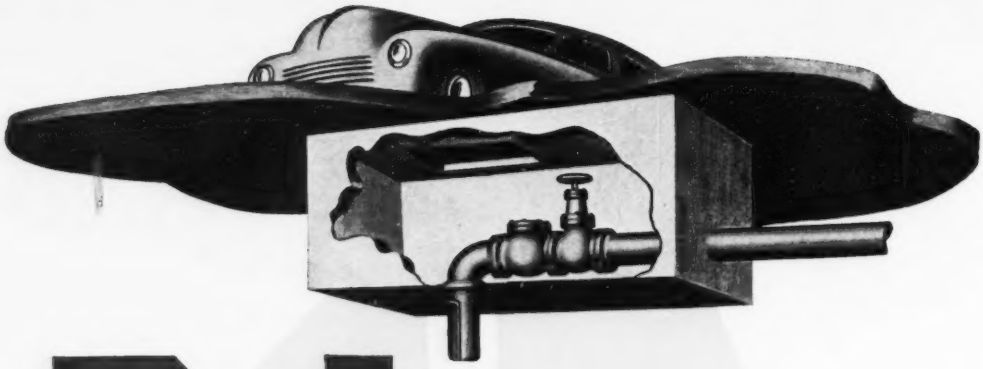
RR—Road Construction Costs (1910-14=100)

By Regions	Per Cent	1926	1932	1939	1945	1946	1947
to VIII	73.09	166	131	137	197	216	245
I	75.36	173	134	140	206	231	263
II	68.15	168	133	141	202	223	255
III	67.99	168	132	144	205	228	259
IV	70.49	163	126	131	195	212	239
V	76.66	164	129	136	195	215	242
VI	77.41	164	129	132	190	207	233
VII	75.62	166	131	133	188	202	232
VIII	78.15	167	133	140	198	215	242

Indexes represent territorial index factors and are not for determining unit reproduction costs for individual roads.

Entire U. S., Regions I to VIII

By Accounts	1926	1932	1939	1945	1946	1947
Engineering	166	131	137	197	216	245
Other Rt. of Way Exp	150	121	135	201	236	238
Grading	153	106	90	144	148	154
Tunnels and Subways	178	119	140	236	269	304
Brdg., Culv. & Trestles	170	122	149	240	272	327
Elevated Structures	165	129	149	249	284	346
Ties	173	144	158	241	252	270
Rails	144	140	136	152	165	210
Other Track Material	177	163	167	176	190	217
Ballast	175	146	143	181	194	207
Trk. Laying & Surf	188	164	165	273	298	336
Fences, Snw. Sheds, Sgns.	178	147	141	189	206	242
Stat. & Off. Bldgs	184	141	166	244	291	333
Roadway Buildings	187	140	162	258	307	341
Water Stations	182	147	166	227	249	286
Fuel Stations	180	144	159	242	270	324
Shops & Eng. Houses	185	137	165	248	294	336
Grain Elevators	190	137	164	236	281	321
Storage Warehouses	189	137	166	253	300	340
Wharves & Docks	177	136	153	255	291	328
Coal & Ore Wharves	174	136	153	236	278	309
Tel. & Tel. Lines	157	121	129	173	192	239
Signals & Intrlocks	169	130	143	176	199	212
Power Plants	186	138	167	246	296	354
Power Trnsmissn. Sys	176	143	148	180	201	240
Misc. Structures	186	141	161	229	290	333
Roadway Machines	151	138	154	187	222	244
Roadway Small Tools	190	155	180	200	245	250
Public Impr.-Const	169	131	142	217	236	278
Shop Machinery	186	155	202	236	271	300
Power Plant Machnry	186	155	180	191	217	240

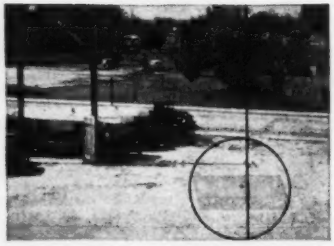


BJ SUBMERSIBLE PUMPS

install completely underground

IN BOISE, IDAHO, a BJ Submersible Pump is operating completely underground at this busy intersection. Byron Jackson Submersibles can be installed anywhere... under lawns, in alleys or parkways, under airport runways, or in river beds...wherever the primary sources indicate the most efficient pump location. No pump house is needed, obstructions are eliminated, and the pump is tamperproof.

IF YOUR WATER SOURCE is difficult from an operating point of view; if a pump house will obstruct any of your routine operations or prove unsightly; if noise abatement is essential; if you might have losses from vandalism, let us plan a Submersible installation to fit your particular needs. Write today for a Byron Jackson booklet explaining the details of the exclusive Submersible design.. Available in sizes from 7½ to 350 hp, capacities to 10,000 gpm at heads up to 1500 feet.



Actually, there's an active pump at this intersection

This Submersible has been in constant operation since installation. Delivers 950 gpm against a total head of 240 feet.

Byron Jackson Co.

Established 1872

LOS ANGELES 54, CALIFORNIA

Offices in Principal Cities

California Studies Highway Costs

Editor's Note—Because of the increasing cost of construction, California highway officials have found that, even with increased revenues, their construction program is not keeping up with highway deficiencies. Initial results of an intensive study were published by Richard H. Wilson, assistant state highway engineer; Henry C. McCarty, office engineer; and Richard R. Norton, assistant office engineer, in the January-February issue of *California Highways & Public Works*. Here is an abstract:

In attempting to answer the question "What effect is inflation having upon California's highway construction program?," one of the primary considerations of California Highway Department officials was a study of the prices charged for construction by contractors. This has resulted in the development of a California highway construction price index (Table I).

This index is based on weighted contract prices of eight major bid items representative of the majority of work on state highway contracts. The year 1940 was selected as the base and assigned an index number of 100.

The state price index indicates that there has been an increase of 116 percent in the cost of construction since 1940. (It indicates a minor decline for the last half of 1948.)

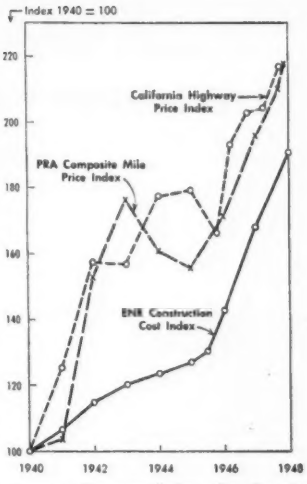
Comparing the California price index with the Public Roads Administration composite mile index and the ENGINEERING NEWS-RECORD construction cost index (Fig. 1), it can be seen that the California index is in line with the others. Because the ENR index does not reflect such intangibles as labor productivity and "gray market" materials prices, it is somewhat lower than the California and the PRA figures. However, the trend shown by all three is that costs were increasing at a faster rate than ever before, and no definite "leveling off" influence had materialized at the time of the California study. (This preceded the minor decline late in 1948.)

Another phase of the California study was comparison of the price charged by contractors with the cost incurred by them. Records of recently completed highway construction projects indicated that the cost to contractors is divided into: Labor —45 percent, materials—27 percent, equipment—23 percent, and overhead —5 percent.

Labor costs obtained from contractors, for example, show that in 1940 the average wage paid for an hour's labor (skilled and unskilled) on California highway construction was $1.01. For the first half of 1948 this figure had risen 98 percent, to $2. A conservative productivity factor of 75 percent was then used, to determine that labor costs for the first half of 1948 were 264 percent of the 1940 costs. Increases in other items were similarly estimated and the contractors' costs for 1948 were computed as shown in Table II.

Thus, the division estimates the costs to the contractors have increased 121 percent since 1940. This compares with the computed 116 percent increase in the price charged the state, indicating that contractors' prices are not out of line with their costs.

Another question studied was whether the large amount of highway



construction now being placed under contract creates an inflationary pressure on the construction market. Apparently it does not. The 507 contractors prequalified by the division of highways have a total combined bidding capacity of $1,049,000,000. Yet on Nov. 1, 1948, there were only 283 contracts in force with a combined cost of $88,604,000—only 8.4 percent of the total bidding capacity.

The number of bidders on each project is another indication of sufficient contractor capacity: From July 1, 1947, to June 30, 1948, the department received an average of 5.6 bids on each job as is shown in Table III. The general trend is toward greater competition on larger projects than on smaller ones, despite the occasional proposal that contract prices could be reduced by splitting up large projects into smaller units.

Table I—California Highway Construction Price Index as Developed From Average Contract Prices

	Roadway Excavation (cu. yd.)	Crusher Run Base (tons)	Plant Mix Surfacing (ton)	Asphalt Concrete Pavement (ton)	PCC Pavement (cu. yd.)	PCC Structures (cu. yd.)	Bar Reinforcing Steel (lb.)	Structural Steel (lb.)	Calif. Hwy. Construction Price Index
1940	$0.22	$1.54	$2.19	$2.97	$7.68	$18.33	$0.040	$0.083	100.0
1941	0.26	2.31	2.84	3.18	7.54	23.31	0.053	0.107	125.0
1942	0.35	2.81	4.02	4.16	9.62	29.48	0.073	0.103	157.5
1943	0.42	2.26	3.71	4.76	11.48	31.76	0.059	0.080	156.4
1944	0.50	2.45	4.10	4.50	10.46	31.99	0.054	0.132	177.8
1945	0.51	2.42	4.20	4.88	10.90	37.20	0.059	0.102	179.5
Jan.-June, 1946	0.41	2.31	4.00	4.54	9.85	37.38	0.060	0.099	166.1
Jul.-Dec. 1946	0.39	2.27	4.12	5.04	12.39	49.84	0.079	0.142	193.2
Jan.-Jun. 1947	0.48	2.62	4.52	6.46	12.41	47.03	0.080	0.133	202.5
July.-Dec. 1947	0.54	2.39	4.02	6.48	11.58	50.15	.089	0.123	204.1
Jan.-Jun. 1948	0.56	2.45	4.42	4.91	13.37	49.51	.094	0.145	216.8
Jul.-Dec. 1948	0.52	2.64	4.80	7.00	13.77	49.10	.103	0.131	216.1
Quantity, year ending Jun. 30, 1948 (000 omitted)	15,697	682	1,501	34	209	164	27,305	36,414	.....

Note: Average prices computed by dividing total cost of an item for period by total quantity for that period. Price index for each period computed by extending total quantities for year ending June 30, 1948 by average prices and dividing by extension for 1940 (base year).

Table II—Contractors' Cost Index

Item	Percent of Item in Total Construction Cost	Present Cost of Item Compared to 1940 =100	Portion of Cost Index
Labor	45	264	118.80
Materials	27	183	49.41
Equipment	23	188	43.24
Overhead	5	200	10.00
1948 Contractors' Cost Index			221.45

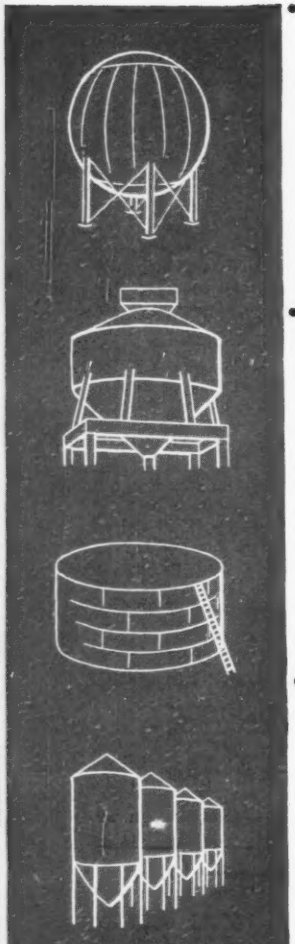
Table III—Contract Data Year Ending June 30, 1948

Size of contract	Average Number of Bids	Number of Prequalified Contractors
Over $1,000,000	7.4	137
$500,000 to $1,000,000	7.0	187
$250,000 to $500,000	7.4	
$100,000 to $250,000	6.6	347*
$50,000 to $100,000	5.2	382*
Up to $50,000	4.5	507
All projects	5.6	1560

* $125,000–$250,000 and $50,000 to $125,000.

Today's PITTSBURGH • DES MOINES Research

anticipates TOMORROW'S STORAGE NEEDS



Send Us Your Problem

The full resources of our research engineering staff, and the Pittsburgh-Des Moines Chemical Storage Fellowship at Mellon Institute for Industrial Research, are at the service of industry in solving questions concerned with proper storage of liquids, gases, and dry materials. We will welcome an opportunity to discuss your own particular storage problem.

Performance Engineering

For specific requirements, we supply *performance-engineered* containers to handle efficiently the factors involved. Advanced welding methods for steel, steel alloys, aluminum and nickel include simplified joint preparation flame gouging for reducing costs of welded joints in thick materials, and other specially-developed techniques. Corrosion prevention research has produced much new information on the chemical treatment of surfaces, protective coatings for atmospheric, water-immersion, and high-temperature exposure, and selection of proper alloy metal for each application.

Write • Phone • Wire!

Pittsburgh-Des Moines engineers are available for consultation on the immediate aspects of your storage construction needs. Extended studies will be undertaken gladly for your future requirements, where storage difficulties prevail and must be resolved in terms of practical performance.

PITTSBURGH • DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

PITTSBURGH . . . . . 3414 Neville Island
NEW YORK . . . Room 916, 270 Broadway
CHICAGO, 1218 First National Bank Bldg.
DES MOINES . . . . . 915 Tuttle Street
DALLAS . . . . 1219 Praetorian Building
SEATTLE . . . . . 922 Lane Street
SANTA CLARA, CAL. . . 621 Alviso Road

Construction Materials Prices in 20 Cities

Market quotations on construction materials reported monthly by ENR correspondents

	CEMENT, Bulk, per bbl CL lots. Incl Dealer Comn. fob city			SAND, per ton Truck lots or over fob city			CONCRETE, READY MIXED 1:2:4, over 50 cy per cy, delivered			BRICK, Clay Backing 3 x 4 x 8⅛ in per M, CL lots fob city		
	1948		1949	1948		1949	1948		1949	1948		1949
	Low	High-Dec.	Mar.	Low	High-Dec.	Mar.	Low	High-Dec.	Mar.	Low	High-Dec.	Mar.
Average	2.67	2.96	2.98	1.83	1.98	2.01	9.56	10.21	10.26	24.41	27.34	27.44
Atlanta	2.82	3.05	3.05	1.75	1.75	1.75	11.00	11.00	11.00	24.00	25.00	25.00
Baltimore	2.66	3.06	3.06	1.60	1.95	1.95	8.55	9.85	9.85	27.00	32.00	32.00[f]
Birmingham	2.45	2.74	2.74	1.63	1.66	1.66[f]	6.95	7.75	7.75	20.00	20.00	20.00
Boston	3.08	3.65[b]	3.44	2.00	2.50	2.50[e,f]	9.40	10.50	10.50[h]	20.00	32.00	32.00
Chicago	2.59	3.00[c]	2.59	2.85	3.20	3.20	.....	.....	.....	20.00	21.00	21.00[f,p]
Cincinnati	2.82	2.94	3.08	1.75	1.75	1.75[f]	9.00	10.40	10.60[i]	33.00	34.00	34.00
Cleveland	2.54	2.82	2.82	1.25	1.55	1.55[g]	10.40	11.80	11.80[g]	25.50	28.50	28.50[f]
Dallas	2.47	2.52	2.52	1.75	1.75	1.75	8.85	8.85	9.30	18.00	18.75	18.75
Denver	3.02	3.29	3.29	1.15	1.15	1.15	9.65	9.65	9.65	28.50	30.00	32.00
Detroit	2.49	2.92	2.97	2.75	3.00	3.00[f]	9.15	9.60	9.60	27.00	30.00	30.00
Kansas City	2.63	2.99	2.99	1.40	1.65	1.65[f]	9.60	9.85	10.65[m]	16.00	16.00	16.00
Los Angeles	3.00	3.34	3.42	1.72	1.72	1.72[f]	9.39	10.78	10.28[k]	20.00	20.00	20.00
Minneapolis	2.80[a]	3.00[a]	3.03[a]	1.20	1.35	1.35[f,n]	9.65	10.70	10.70[n]	23.50	30.00	30.00
New Orleans	2.33	2.75	2.75	1.67	1.82	1.82	10.65	10.65	10.65	22.50	29.00	29.00
New York	Bulk not quoted			1.30	1.45	1.45[m]	9.90	10.50[r]	10.50[n]	28.00	33.00	33.00
Philadelphia	2.47	3.10	3.14	2.05	2.05	2.05[f]	9.25	9.85	9.85	24.75	27.00	27.00
Pittsburgh	2.41	3.15[d]	3.16	2.35	2.35	3.00[f]	10.85	11.50	11.50	26.00	26.00	26.00
St. Louis	2.61	2.75	2.75	2.125	2.20	2.20[f]	10.15	10.40	10.40	28.50	32.50	32.50
San Francisco	2.64	2.98	2.98	1.81	1.94	1.94	9.92	10.75	10.75[n]	27.50	30.00	30.00[e]
Seattle	2.80	2.95	2.95	2.50	2.75	2.75[e,f]	9.00	9.75	9.75[f]	28.50	32.00	32.00

CEMENT: [a] CL price from Cement Co. Dealers sell only LCL. [b] Dec. 3.40. [c] Dec. 2.59. [d] Dec. 3.10.
SAND, READY MIXED CONCRETE BRICK: Footnotes shown once apply to all 3 series of prices. [e] Per cu. yd. [f] Delivered. [g] fob plant. [h] Barge lots and. [i] 5% cash disc. [j] 2% cash disc. [k] 50c. cash disc. [l] Up to 500 cy. [m] 25 cy. plus. [n] 10–100 cy. [o] 7–9 mi. zone. [p] 3⅛ x 4 x 8⅛. [q] 2⅛ x 8⅛ x 4". [r] Dec. 10.30.

	STRUCTURAL CLAY TILE Partition, Scored, 3 x 12 x 12 per M 2000 pieces or over delivered			LUMBER, No. 2 Common or better, 2 x 4 s4s Short Leaf Yellow Pine				Douglas Fir			
	1948		1949	1948			1949	1948			1949
	Low	High-Dec.	Mar.	Jan.	High	Dec.	Mar.	Jan.	High	Dec.	Mar.
Average	120.23	129.26	130.71	89.49	92.43	88.88	78.95	97.34	101.92	95.61	90.87
Atlanta	.....	.....	.....	70.00	70.00	60.00	60.00[b]	96.50	96.50	.....	.....[b]
Baltimore	120.00	120.00	170.00	96.00	96.00	92.00	92.00	112.30	115.00	113.00	115.00
Birmingham	97.50	97.50	97.50	87.00	87.00	75.00	73.00[b]	92.00	92.00	75.00	77.00[b]
Boston	105.00	145.65	145.65[a]	88.00	92.00	85.00	83.00[a]	95.00	102.00	92.00	92.00
Chicago	115.00	115.00	115.00	93.00	93.00	80.00	80.00[d]	100.00	100.00	92.00	86.00[d]
Cincinnati	155.00	170.00	170.00	95.00	105.00	105.00	90.00	.....	.....	.....	90.00
Cleveland	107.50	118.00	118.00	97.00	97.00	73.00	71.00	.....	.....	.....	.....
Dallas	.....	.....	.....	61.00	61.00	61.00	61.00[b]	.....	.....	.....	.....
Denver	.....	.....	.....	.....	.....	.....	.....	96.50	113.00	110.00	97.00
Detroit	117.08	130.00[e]	117.08	90.00	90.00	73.00	72.00	92.00	94.00	85.00	88.00
Kansas City	.....	.....	115.50	100.00	101.50	101.50	.....[g]	100.00	106.50	106.50	89.75[g]
Los Angeles	Not Used		.....	.....	.....	.....	.....	103.00	103.00	88.00	76.00[h]
Minneapolis	144.00	152.00	152.00	.....	.....	.....	.....	108.00	113.00	111.00	105.00[e]
New Orleans	160.00	160.00	160.00	84.00	84.00	70.00	70.00[h]	70.00	71.00	71.00	71.00[h]
New York	103.90	112.20	118.00	96.25	107.50	85.00	81.25[d]	125.00	125.00	101.25	97.50[d]
Philadelphia	112.10	112.10	112.10	105.00	105.00	99.75	95.00	115.00	115.00	115.00	110.00
Pittsburgh	98.50	98.50	98.50	80.10	82.50	82.50	82.50[h]	83.00	105.60	105.00	105.00
St. Louis	106.92	126.00	120.00	100.00	115.00	99.50	94.50[e]	120.00	130.00	120.00	115.00[e]
San Francisco	124.00	132.00	132.00	.....	.....	.....	.....	76.50	81.00	73.00	68.00[e]
Seattle	137.00	150.00	150.00	.....	.....	.....	.....	70.00	70.00	70.00	62.50[e]

Footnotes each group apply to all three price series. [a] Fob. [b] Fob. mill. [c] Norway pine. [d] Delivered. [e] Delivered LCL lots. [f] No. 1 com. [g] Retail LCL. [h] Yard. [i] Dec. 117.08 (Applies Detroit High-Dec. series only.)

Basic Building Materials Prices

Average yearly prices at New York, except steel and cast iron pipe

Year	Brick Common per M	Cement per bbl.	Lime per bbl.	Pine per M ft. BM	Steel Shapes per cwt.	Cast Iron Pipe per ton
1874	$7.41	$1.48R	$1.50a	$26.00d	....	$43.76h
1870	6.65	2.25R	.95a	21.75d	....	24.65h
1907	6.16	1.55	.95a	30.50d	1.75	31.52i
1913	6.75	1.18	.915a	25.04e	1.50	21.96i
1929	11.71	2.23	2.25b	64.50f	1.92	36.66i
1932	9.75	1.62	2.25b	39.91f	1.56	30.58i
1938	13.10	2.12	2.80b	59.33f	2.18	48.33i
1939	13.46	2.20	2.80b	64.35f	2.10	46.75i
1942	14.17	2.20	2.80b	85.61f	2.10	49.00i
1947	26.38	3.46	24.34c	115.83g	2.61	75.46i
1948	**30.33**	**4.05**	**26.32c**	**114.38g**	**2.98**	**89.58i**

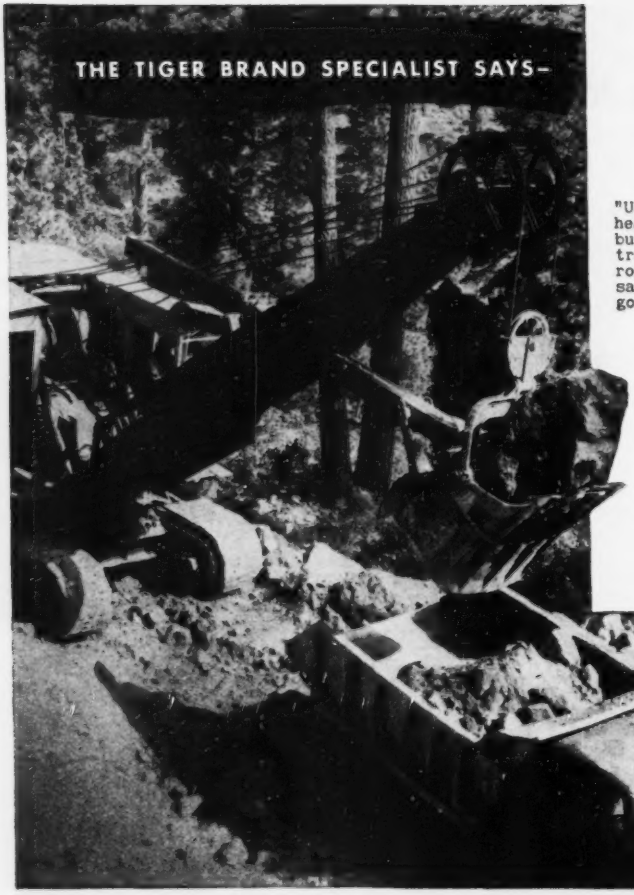
BRICK: wholesale, fob; CEMENT: net, delivered **R** Rosendale, rest Portland; LIME: **a** common lump, wholesale, fob, 180 lb., net, **b** 280 lb., **c** common hydrated, delivered, per ton (40 bags of 50 lb. ea) no longer quoted per bbl.; LUMBER: No. 1 common, rough, **d** 1-in. yellow pine, wholesale at dock, **e** 3-in. LLYP, **f** 3 x 12 LLYP from Lumber Trade Jl., **g** 3 x 12 SLYP (LLYP out of market); STEEL: fob Pittsburgh; CAST IRON PIPE: fob Delaware River foundries, **h** all classes bell and spigot, **i** 6-in. and larger, Cl. B or heavier bell and spigot.

Index Wholesale Price Bu. of Labor Statistics

Building Materials

(1926=100)	1929	1932	1939	1942	1946	1947	1948
All	**95.4**	**71.4**	**90.5**	**110.2**	**132.2**	**179.7**	**193.6**
Brick and tile	94.3	77.3	91.4	98.0	123.0	139.6	155.7
Cement	91.8	77.2	91.3	94.0	104.1	115.5	130.4
Lumber	93.8	58.5	93.2	133.0	177.5	276.0	311.2
Paint	94.9	71.1	82.8	100.3	118.3	165.5	159.6
Plumb & heat	95.0	66.8	79.2	95.4	103.5	125.4	147.6
Struc. steel	98.1	80.9	107.3	107.3	118.5	134.3	163.7
Other	97.7	79.5	90.3	103.5	117.9	147.1	167.6

BLS, late in 1948, launched a new weekly wholesale price index covering building materials predominant in housing cost. This has fewer components than the monthly index reported above but agreed on trend.



"Here's one case where wire rope care paid off big!"

"Usually when I show up on the job, I hear all the 'gripes' about wire rope but today it was different. This contractor got rid of the bugaboo of early rope breakage and saved himself thousands of dollars. He was feeling so good, he even slipped me a cigar.

"He's done everything in his power to minimize wear and breakage of wire rope by keeping the condition of his equipment right up to 'snuff'. And he's got the best bunch of shovel runners you ever saw. They certainly know how to handle these machines without abusing the rope.

"But that's not all. Last year they switched to Tiger Brand Excellay Preformed Ropes and they've been getting better service than ever before. You can see that with 25 trucks on the job, any work stoppage–even for half a day–would cost them real 'dough'."

How proper wire rope application saves you money

There is always one best type of wire rope for every application and the TIGER BRAND Wire Rope Specialist can help you select the right ropes for your particular needs. He'll check your equipment, keep you posted on proper rope care, and a dozen other things to assure long service life at low unit cost.

To help you maintain these operating standards, we have prepared a booklet entitled, "Valuable Facts about the use and care of Wire Rope." Every key man on your operating staff should be supplied with this much needed information. Send the handy coupon for your copy.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN TIGER BRAND
WIRE ROPE
Excellay Preformed

SEND FOR NEW FREE BOOKLET

American Steel & Wire Company
Rockefeller Building, Dept. A-3-17
Cleveland 13, Ohio

Gentlemen:
Please send me a copy of your booklet, "Valuable Facts about the use and care of Wire Rope."

Name.....
Company.....
Position.....
Address.....
City..... State.....

UNITED STATES STEEL

Construction Wage Rates and Trends

ENR Construction Wages 20-cities average

SKILLED LABOR † * (Dollars per Hour)

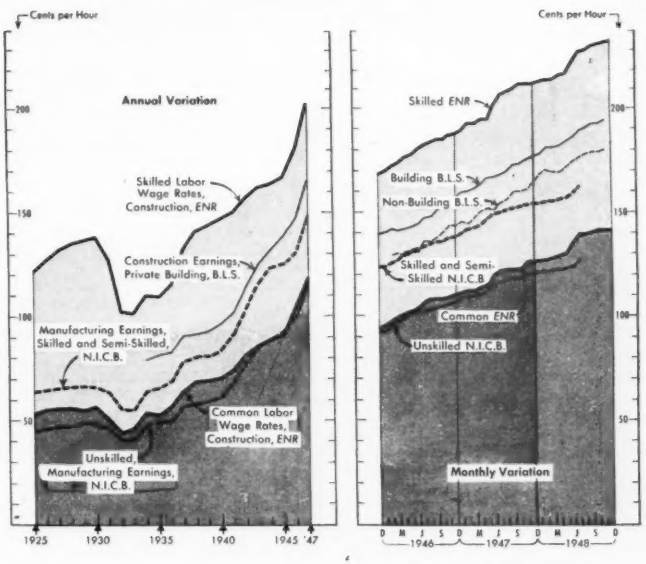
	1926	1932	1939	1942	1945	1946	1947	1948	1949
J	1.24	1.15	1.43	1.53	1.64	1.70	1.90	2.14	2.35
F	1.24	1.11	1.43	1.54	1.64	1.73	1.92	2.15	2.35
M	1.24	1.11	1.43	1.54	1.64	1.74	1.92	2.15	2.38
A	1.25	.95	1.44	1.54	1.65	1.76	1.93	2.17	....
M	1.26	.96	1.44	1.54	1.65	1.77	1.94	2.18	....
J	1.27	.99	1.44	1.55	1.66	1.80	2.02	2.25	....
J	1.27	1.00	1.44	1.56	1.66	1.82	2.07	2.29	....
A	1.28	.98	1.44	1.59	1.67	1.83	2.08	2.30	....
S	1.28	.99	1.44	1.59	1.67	1.84	2.10	2.32	....
O	1.29	.98	1.44	1.59	1.67	1.85	2.13	2.33	....
N	1.29	.97	1.46	1.60	1.68	1.86	2.13	2.34	....
D	1.29	.98	1.46	1.60	1.68	1.87	2.14	2.35	....
Av.	**1.27**	**1.02**	**1.44**	**1.56**	**1.66**	**1.80**	**2.02**	**2.25**	
M1	.651	.559	.81	1.044	1.248	1.321	1.478	1.618#	

COMMON LABOR * (Dollars per Hour)

	1926	1932	1939	1942	1945	1946	1947	1948	1949
J	.54	.432	.682	.776	.891	.952	1.110	1.272	1.417
F	.54	.432	.680	.780	.891	.968	1.118	1.272	1.417
M	.543	.436	.680	.780	.895	.988	1.118	1.283	1.424
A	.543	.412	.683	.788	.904	1.004	1.133	1.287	....
M	.55	.411	.682	.788	.909	1.018	1.140	1.300	....
J	.55	.412	.684	.796	.916	1.034	1.185	1.352	....
J	.553	.411	.684	.802	.916	1.058	1.233	1.394	....
A	.555	.422	.685	.823	.916	1.071	1.237	1.394	....
S	.555	.431	.685	.823	.917	1.072	1.237	1.401	....
O	.55	.431	.685	.826	.917	1.073	1.263	1.413	....
N	.555	.426	.685	.832	.917	1.078	1.265	1.413	....
D	.555	.427	.685	.832	.938	1.085	1.272	1.413	....
Av.	**.548**	**.4269**	**.683**	**.804**	**.910**	**1.033**	**1.193**	**1.350**	
M2	.461	.401	.594	.774	.917	1.015	1.147	1.265#	

† ENR Skilled average represents rates for bricklayers, carpenters, ironworkers.
M1 NICB Skilled and Semi-skilled Manufacturing.
M2 NICB Unskilled Manufacturing.
* Reported by ENR each month.
# Value for July 1948; series then discontinued.

The ENR 20-cities wage average is based on straight time hourly rates for skilled and unskilled construction labor. BLS wage trends also shown in chart are hourly earnings for both building and non-building workers.



B.L.S. Consumers' Price Index (1935-1939 = 100)

	1926	1932	1939	1942	1945	1946	1947	1948
January	.....	.....	.....	112.0	127.1	129.9	153.3	168.8
February	.....	.....	.....	112.9	126.9	129.6	153.2	167.5
March	.....	.....	99.2	114.3	126.8	130.2	156.3	166.9
April	.....	.....	.....	115.1	127.1	131.1	156.2	169.3
May	.....	.....	.....	116.0	128.1	131.7	156.0	170.5
June	124.1	101.1	98.2	116.4	129.0	133.3	157.1	171.7
July	.....	.....	.....	117.0	129.4	141.2	158.4	173.7
August	.....	.....	.....	117.5	129.3	144.1	160.3	174.5
September	.....	.....	101.3	117.8	128.9	145.9	163.8	174.5
October	.....	.....	.....	119.0	128.9	148.6	163.8	173.6
November	.....	.....	.....	119.8	129.3	152.2	164.9	172.2
December	124.5	97.3	100.1	120.4	129.9	153.3	167.0	171.4

Yearly Average WAGES OF SIX BUILDING TRADES in Seven Cities

Bricklayers

	Boston	New York	Chicago	Birmingham	St. Louis	San Francisco	Seattle
1926	$1.35	$1.645	$1.56	$1.25	$1.75	$1.25	$1.375
1932	1.105	1.47	1.40	.825	1.50	1.175	.975
1939	1.50	1.893	1.70	1.50	1.50	1.75	1.60
1942	1.573	2.00	1.721	1.75	1.563	1.771	1.715
1945	1.625	2.00	1.84	1.75	1.84	1.875	1.845
1946	1.883	2.25	1.96	1.89	1.975	2.006	1.937
1947	2.085	2.646	2.117	2.037	2.25	2.233	2.181
1948	2.35	2.94	2.32	2.25	2.60	2.67	2.37

Common Building Laborers

	Boston	New York	Chicago	Birmingham	St. Louis	San Francisco	Seattle
1926	$0.77	$1.07	$0.88	$0.625	$1.20	$0.8125	$1.00
1932	.70	1.00	.825	.40	1.00	.70	.80
1939	.85	1.14	1.025	.40	1.00	1.25	1.15
1942	1.00	1.214	1.063	.65	1.075	1.25	1.265
1945	1.028	1.215	1.215	.641	1.056	1.072	1.172
1946	1.1667	1.233	1.25	.65	1.00	1.1406	1.2371
1947	1.328	1.438	1.417	.775	1.288	1.325	1.47
1948	1.487	1.616	1.616	.908	1.437	1.465	1.668

Carpenters

	Boston	New York	Chicago	Birmingham	St. Louis	San Francisco	Seattle
1926	$1.20	$1.45	$1.39	$0.6575	$1.50	$1.00	$1.125
1932	1.04	1.33	1.40	.60	1.275	.96	.695
1939	1.375	1.75	1.625	1.125	1.25	1.25	1.25
1942	1.417	1.85	1.656	1.167	1.50	1.385	1.415
1945	1.50	1.85	1.756	1.281	1.62	1.50	1.55
1946	1.625	2.10	1.9083	1.4479	1.8667	1.7083	1.6371
1947	1.838	2.467	2.067	1.573	2.044	1.883	1.881
1948	2.63	2.73	2.27	1.73	2.26	2.08	2.065

Plasterers

	Boston	New York	Chicago	Birmingham	St. Louis	San Francisco	Seattle
1926	$1.50	$1.75	$1.50	.....	$1.75	$1.50	$1.375
1932	1.625	1.50	1.375	$1.25	1.50	1.10	1.20
1939	1.625	2.00	1.70	1.00	1.58	1.60	1.60
1942	1.65	2.00	1.825	1.50	1.75	1.681	1.715
1945	1.667	2.00	1.844	1.61	1.75	1.75	1.85
1946	1.8611	2.1875	1.95	1.65	1.90	1.9375	1.9371
1947	2.042	2.75	2.131	1.906	2.25	2.229	2.17
1948	2.395	3.08	2.33	2.116	2.35	2.25	2.37

Structural Ironworkers

	Boston	New York	Chicago	Birmingham	St. Louis	San Francisco	Seattle
1926	$1.23	$1.60	$1.405	$1.25	$1.50	$1.125	$1.125
1932	1.205	1.675	1.375	.75	1.50	1.13	1.13
1939	1.50	1.925	1.70	1.25	1.75	1.50	1.50
1942	1.588	2.00	1.725	1.50	1.75	1.625	1.615
1945	1.666	2.00	1.865	1.594	1.79	1.75	1.745
1946	1.7875	2.25	1.9033	1.625	1.9708	1.875	1.7954
1947	1.921	2.563	2.117	1.788	2.125	2.083	2.043
1948	2.283	2.98	2.32	2.05	2.35	2.275	2.265

Common Laborers

	Boston	New York	Chicago	Birmingham	St. Louis	San Francisco	Seattle
1926	$0.615	$0.815	$0.86	$0.30	$0.6525	$0.525	$0.5675
1932	.575	.645	.665	.225	.56	.55	.48
1939	.725	.912	1.025	.35	.663	.65	.908
1942	.879	.991	1.056	.6375	.8875	.8875	1.058
1945	1.00	1.06	1.16	.65	1.00	1.00	1.145
1946	1.1667	1.2042	1.25	.65	1.00	1.1406	1.2433
1947	1.338	1.438	1.417	.875	1.325	1.325	1.363
1948	1.49	1.63	1.62	.96	1.57	1.46	1.67

Complete record by years in ENR, May 27, 1948.

Index of Union Hourly Wage Rates in Each Building Trade (1939 = 100)

U. S. Bureau of Labor Statistics, Wage Analysis Branch

Year	All Building Trades	Journeymen	Helpers & Laborers	Bricklayers	Carpenters	Cement Finishers	Electricians (Inside Wiring)	Glaziers	Lathers	Painters	Plasterers	Plumbers & Gas Fitters	Sheet Metal Workers	Steam & Sprinkler Fitters	Stonemasons	Structural Ironworkers	Building Laborers	Hod Carriers
1907	29.3	29.7	27.3	37.7	29.8	34.5	27.9	.....	.....	26.2	37.3	33.3	30.6	30.1	33.9	27.9	30.8	30.3
1913	36.1	36.9	31.8	41.5	36.8	38.0	33.8	.....	34.6	35.5	39.3	37.9	35.6	35.0	36.7	37.3	34.2	31.8
1926	88.3	88.7	84.9	94.1	88.5	86.6	81.5	80.7	83.0	90.9	93.4	83.9	86.3	84.9	92.7	81.1	86.9	85.5
1930	97.0	97.5	93.3	101.8	96.9	95.4	90.0	92.6	89.6	100.6	98.1	91.5	94.7	93.5	99.1	92.5	92.9	94.9
1932	83.1	83.6	79.2	87.0	79.6	83.6	87.9	78.0	80.0	85.3	81.4	80.5	83.4	81.0	88.4	81.0	78.7	.....
1938	99.3	99.3	99.2	99.5	99.8	99.6	99.5	99.3	96.8	99.2	99.2	99.1	98.6	99.3	99.7	98.9	99.4	99.7
1942	111.9	110.9	117.5	108.3	112.1	110.8	113.5	108.8	109.1	110.5	105.0	110.5	116.0	109.3	108.0	108.7	119.6	115.7
1946	129.3	126.8	146.3	125.6	129.7	128.2	124.9	123.4	124.2	127.3	119.0	123.2	133.0	124.6	126.5	121.4	152.2	141.7
1947	147.9	144.6	171.1	165.6	149.6	144.3	140.9	141.9	144.4	142.4	139.3	142.9	146.8	139.1	145.0	136.3	177.9	165.6
1948	163.5	159.4	192.7	165.6	164.7	161.1	154.4	155.5	157.8	154.4	148.2	158.2	164.4	154.3	166.0	151.9	200.8	185.5

Index of Union Hourly Wage Rates in Each Building Trade (1939 = 100)

Year	All Building Trades	Journeymen	Helpers & Laborers	Bricklayers	Carpenters	Cement Finishers	Electricians (Inside Wiring)	Glaziers	Lathers	Painters	Plasterers	Plumbers & Gas Fitters	Sheet Metal Workers	Steam & Sprinkler Fitters	Stonemasons	Structural Ironworkers	Building Laborers	Hod Carriers
1907	124.3	123.8	126.1	122.9	121.0	122.7	124.2	.....	.....	131.1	125.8	120.6	117.0	120.3	118.4	121.3	121.6	118.9
1913	118.2	118.0	118.3	114.9	115.6	119.8	120.7	.....	121.8	125.9	124.3	119.2	114.9	118.0	115.7	114.1	118.3	116.0
1926	114.9	115.1	113.9	113.3	113.5	113.4	115.9	116.5	118.9	120.7	118.2	116.5	111.8	114.4	114.5	112.8	112.1	113.9
1930	109.8	110.0	109.0	107.1	109.4	108.1	109.9	112.4	110.4	115.1	113.0	109.9	106.9	108.5	107.1	108.8	110.0	106.9
1932	106.5	106.6	105.7	103.1	105.0	105.6	106.2	107.9	109.3	114.2	110.0	108.0	103.6	106.4	104.8	104.8	104.9	104.0
1938	100.2	100.1	100.2	100.0	100.0	100.0	100.3	100.2	100.8	110.4	100.0	99.7	100.0	99.6	100.0	100.1	100.1	100.3
1942	101.1	101.8	98.8	100.8	100.8	100.6	104.6	102.0	102.5	106.5	102.0	99.9	100.9	102.2	100.2	101.1	98.8	98.6
1946	100.2	101.1	97.4	100.3	100.3	100.4	100.5	102.0	102.2	106.1	104.1	98.3	100.8	101.3	100.0	101.1	97.2	96.9
1947	100.1	100.9	97.4	99.8	100.2	100.0	100.5	103.5	102.2	106.2	103.0	97.3	100.1	101.3	99.3	101.1	97.2	96.4
1948	100.1	101.0	97.3	100.5	100.2	100.0	100.5	103.5	98.1	106.2	102.9	97.6	100.1	101.3	101.0	101.1	97.2	96.4

Canadian Wage Rates for 8 Building Trades in 11 Cities

Rates from Dept. of Labour, and Canadian Construction Association

	Bricklayers			Carpenters			Electricians			Painters		
	1939	1947	1948	1939	1947	1948	1939	1947	1948	1939	1947	1948
Halifax	$1.00	$1.33	$1.44	$.70	$1.11	$1.23	$.85	$1.23	$1.33	$.60	$.95	$1.10
Saint John	.90	1.35	1.45	.50–.66	.95	1.00	.50–.65	.95	1.10	.50–.55	.87	.96
Quebec	.75–.85	1.15	1.50	.55–.60	.96	1.00	.55–.65	.95	1.00	.50–.55	.90	.95
Montreal	.80–.90	1.40–1.75*	1.60	.70	1.06	1.25	.75	1.11	1.35	.66	.95–1.00	1.15
Toronto	1.00	1.60	1.75	.90	1.35	1.50	1.00	1.45	1.65	.75	1.15	1.25
Hamilton	.90	1.45	1.60	.75	1.25	1.40	.75	1.20	1.40	.65	1.05	1.10
Windsor	1.15	1.50	1.65	.95	1.35	1.50	1.15	1.50	1.65	.60–.65	1.10–1.25	1.20
Winnipeg	1.10	1.45	1.45	.85	1.25	1.35	.85	1.25	1.35	.70	1.10	1.15
Saskatoon	1.00	1.40–1.50	.....	.50–.75	1.20–1.30	....	.70–.80	1.20	....	.50–.70	.90	....
Edmonton	1.10	1.60	1.75	.90	1.25	1.40	.85	1.265	1.27	.80	1.10	1.25
Vancouver	1.10	1.60	1.75	.75–.90	1.40	1.55	.75–1.00	1.50	1.70	.65–.80	1.20	1.35

*1.17 is the official union rate.

	Plasterers			Plumbers			Sheetmetal Workers			Labourers		
	1939	1947	1948	1939	1947	1948	1939	1947	1948	1939	1947	1948
Halifax	$.80	$1.21	$1.35	$.85	$1.19	$1.30	$.70	$.99	$1.10	$.30–.40	$.50–.70	$.72
Saint John	.90	1.35	1.35	.60–.70	1.05	1.20	.50–.65	.95	.90	.30–.40	.55–.65	.61
Quebec	.75	1.15	1.35	.55–.65	.95	1.00	.55–.65	.95	1.00	.40	.70	.75
Montreal	.80	1.40*	1.50	.75	1.40	1.45	.65–.75	1.06	1.25	.40	.70	.80
Toronto	.90	1.50	1.80	1.00	1.48	1.60	.93	1.46	1.65	.35–.50	.80–.95	.86
Hamilton	.90	1.45	1.50	.85	1.42	1.42	.75	.90–1.25	1.25	.35–.45	.65–.80	.80
Windsor	.90	1.40	1.55	1.00	1.50	1.65	.70–.85	1.35	1.50	.55	.80–.95	.96
Winnipeg	1.10	1.45	1.50	.95	1.35	1.50	.70	.95	.95	.40–.45	.70–.80	.75
Saskatoon	.75–1.00	1.00–1.25	....	1.00	1.35	....	.75–.90	.80–1.15	....	.30–.40	.65–.75	....
Edmonton	1.05	1.60	1.60	1.05	1.35	1.50	.90	1.30	1.45	.40–.50	.80	.90
Vancouver	1.00	1.475	1.75	1.00	1.35	1.65	1.00	1.48	1.65	.45–.50	.90–1.00	1.00

*$1.17 is the official union rate.

Note: Vacation Pay Assessments for above trades are as follows: Toronto—4% (except for painters and sheetmetal workers), Hamilton—2%, Windsor—2%, Winnipeg—2%, Saskatoon—4%, Edmonton—2–4%, and Vancouver—2½%.

Hourly wage rates in Canada increased 11.3 percent during 1948 over 1947 and closed the year 75.9 percent above 1939 unweighted average for 8 building trades in 8 cities. Cost of living increased 8.4 percent during 1948, and in December was 56.3 percent above the August, 1939 average. Since 1939 more continuous employment, up-grading, and overtime have raised earnings more than indicated by these wage increases reported by Dominion Bureau of Statistics and Canadian Construction Association.

Wage Rates per Hour New York City

	Carpenters	Bricklayers	Masons' Laborers	Common Laborers	Structural Iron-Workers
1874	.23 (10 hrs.)	.43 (8 hrs.)	.18 (8 hrs.)	.14 (10 hrs.)	.....
1890	.43 (8 hrs.)	.47 (8 hrs.)	.28 (9 hrs.)	.14 (9 hrs.)	.....
1907	.63	.70	.38	.22 (8 hrs.)	.60 (8 hrs.)
1913	.63	.70	.38	.23	.63
1930	1.65	1.93	1.03	1.03	1.93
1932	1.33	1.47	1.00	.65	1.68
1938	1.75 (7 hrs.)	1.89 (7 hrs.)	1.00	.91	1.93
1939	1.75	1.89	1.03	.91	1.93
1942	1.85	2.00	1.03	.95	2.00
1946	2.10	2.25	1.23	1.20	2.25
1947	2.47	2.65	1.44	1.44	2.56
1948	2.73	2.94	1.62	1.63	2.98

Wage Rates per Hour Chicago (Cook County)

Chicago Builders Directory and Guide

	Bricklayers	Carpenters	Electrical Workers	Cement Finishers	Laborers
1903	.625	.563	.623	.55	.35
1913	.75	.65	.75	.65	.40
1926	1.63	1.80	1.50	1.50	.90
1930	1.70	1.63	1.70	1.63	.975
1932	1.38	1.31	1.25–1.50	1.31	.825
1936	1.70	1.63	1.70	1.63	1.03
1939	1.70	1.63	1.70	1.63	1.03
1942	1.75	1.70	1.70	1.70	1.10
1946	2.00	1.95	1.98	1.95	1.30
1947	2.20	2.15	2.15	2.15	1.50
1948	2.40	2.35	2.35	2.35	1.70

Mexico City Prices

In Pesos, F.o.b. City		Dec. '47	Dec. '48
Common Wages—Building (8 hr. day)	av. per hr.	$.57	$.57
Common Wages—Heavy Const. (8 hr. day)	av. per hr.	.75	.75
Skilled Labor Wages			
Carpenters (8 hr. day)	av. per hr.	1.25	1.25
Bricklayers (8 hr. day)	av. per hr.	1.25	1.25
Struct. Iron Workers (8 hr. day)	av. per hr.	1.50	1.50
Struct. Steel Shapes 3"–15" x 12 meters	per ton	800.00	1,300.00
Reinforced Steel, Corr. Rods			
⅜" x 12 meters	per ton	1,000.00	1,140.00
½" x 12 meters	per ton	955.00	1,080.00
⅝" x 12 meters	per ton	940.00	1,050.00
¾" x 12 meters	per ton	940.00	1,020.00
⅞" x 12 meters	per ton	930.00	1,020.00
1" x 12 meters	per ton	925.00	1,020.00
Gravel, truck load of 3½ cu. meters			
Blue Gravel	per tr. load	33.00	30.00
Rose Gravel	per tr. load	32.00	32.00
Cement, Std. Port.(Tolteca)	per ton	115.00	115.00
Lumber			
Mex. Sacred Fir (Oyamel)	per M ft.	370.00	350.00
1st Class Pine	per M ft.	700.00	600.00
2nd Class Pine	per M ft.	500.00	500.00

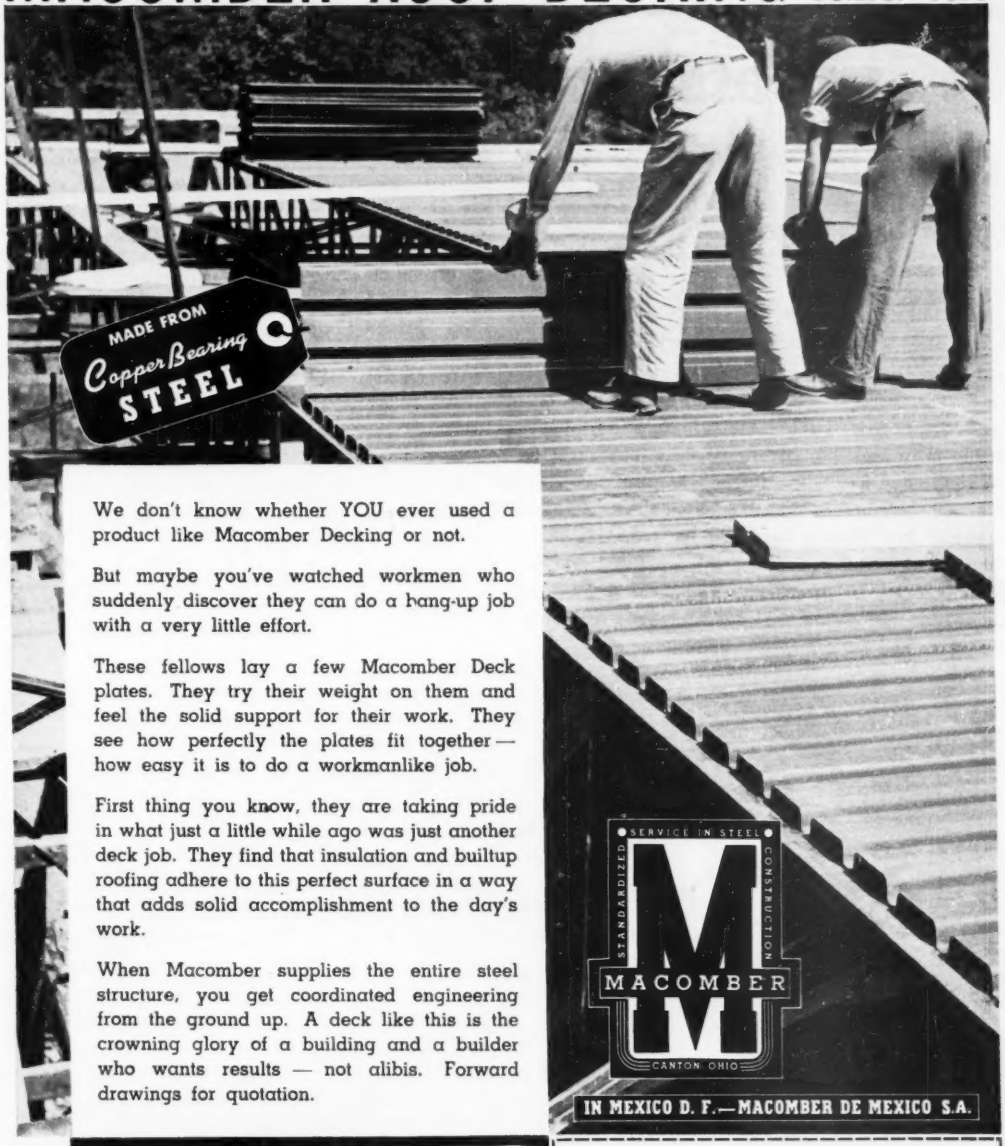
Average Earnings and Hours on Private Construction Projects

U. S. Bureau of Labor Statistics: Nov. 1948

U. S. Average	Average hourly earnings	Average weekly hours
Total building	**$1.937**	**36.7**
All building trades	2.014	37.4
Plumbing and heating	2.021	37.7
Painting and decoration	2.002	34.9
Electrical	2.200	39.4
Masonry	2.025	36.2
Plastering and lathing	2.240	34.7
Carpentry	1.841	37.1
Roofing and sheet metal	1.762	37.3
Excavation and foundation	1.777	38.7
Total non-building	**1.795**	**39.7**
Highway and street	1.685	37.6
Heavy construction	1.860	40.6
Other	1.723	39.3

MACOMBER ROOF DECKING

THE PERFECT SUPPORT FOR BUILTUP JOBS



We don't know whether YOU ever used a product like Macomber Decking or not.

But maybe you've watched workmen who suddenly discover they can do a hang-up job with a very little effort.

These fellows lay a few Macomber Deck plates. They try their weight on them and feel the solid support for their work. They see how perfectly the plates fit together — how easy it is to do a workmanlike job.

First thing you know, they are taking pride in what just a little while ago was just another deck job. They find that insulation and builtup roofing adhere to this perfect surface in a way that adds solid accomplishment to the day's work.

When Macomber supplies the entire steel structure, you get coordinated engineering from the ground up. A deck like this is the crowning glory of a building and a builder who wants results — not alibis. Forward drawings for quotation.

STANDARDIZED · SERVICE IN STEEL · CONSTRUCTION
M
MACOMBER
CANTON, OHIO

IN MEXICO D. F.—MACOMBER DE MEXICO S.A.

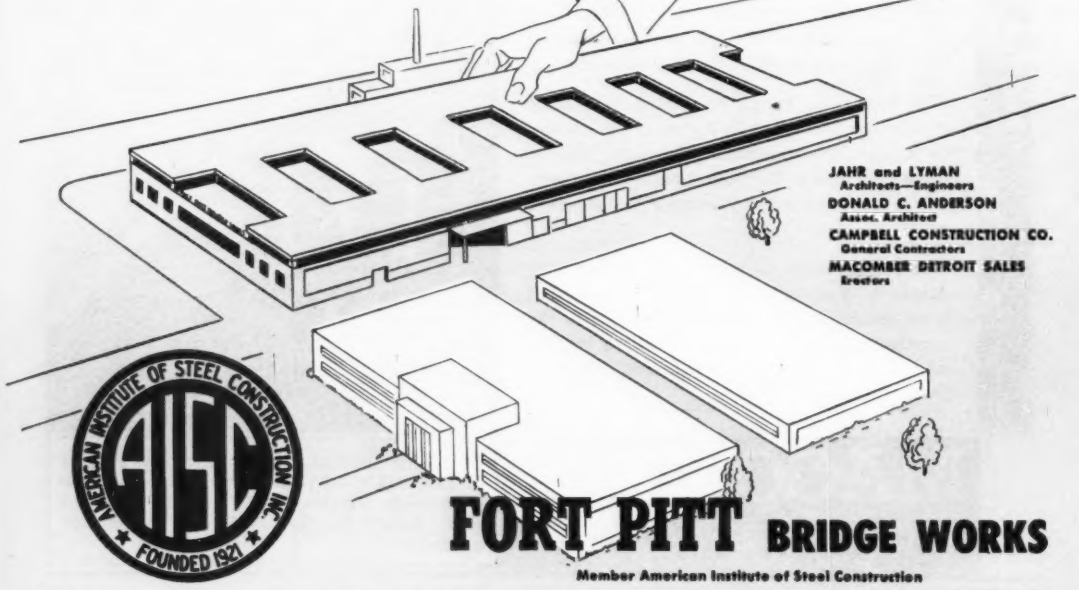
MACOMBER
INCORPORATED
CANTON, OHIO

CLIP THIS NOTICE and forward for your copy of new DECK CATALOG containing the new steel deck specifications. A MUST for your files. Ready shortly. Add your name and address.

STEEL JOISTS • LONGSPANS • ROOF TRUSSES • STEEL SIDING

FORT PITT BRIDGE
meets an
"IMPOSSIBLE SCHEDULE"

Let's look at this "impossible schedule"—ground was broken for the main building, covering nearly four acres on February 13, 1948—and it *was ready for occupancy* on July 26, 1948. This record-shattering construction achievement for the Harry Ferguson, Inc. Tractor Assembly Plant and Power House—for which Fort Pitt Bridge supplied the Structural Steel—is proof of the importance of progressive architectural planning, modern engineering "know-how," owner's foresight, contractor's ability to produce and *suppliers' integrity*.



JAHR and LYMAN
Architects—Engineers
DONALD C. ANDERSON
Assoc. Architect
CAMPBELL CONSTRUCTION CO.
General Contractors
MACOMBER DETROIT SALES
Erectors

AMERICAN INSTITUTE OF STEEL CONSTRUCTION INC. AISC FOUNDED 1921

FORT PITT BRIDGE WORKS

Member American Institute of Steel Construction

General Offices, Pittsburgh, Pa. · Plant at Canonsburg, Pa.

BRANCH OFFICES

New York, N.Y....441 Lexington Ave.
Cleveland, Ohio.....Bulkley Building
Columbus, Ohio, Huntington Bank Bldg.
Detroit, Michigan....New Center Bldg.

"STEEL PERMITS STREAMLINING CONSTRUCTION WITH SAFETY, ENDURANCE AND ECONOMY"

Building Trades Wage Rates—8-Hour Day

(Prevailing February 15, 1949.—Compiled by Engineering News-Record)

City and State	Carpenters	Bricklayers	Structural Ironworkers	Common Labor—Buildings	Common Labor—Heavy Constr.	Stonemasons	Mason's Helpers	Plasterers	Mosaic and Terrazzo	Tile Layers	Cement Finishers	Lathers	Electric Workers (Inside)	Painters	Glaziers	Plumbers	Steamfitters	Roofers	Waterproofers	Sheet Metal Workers	Welders	Hoisting Eng.—1-Drum	Hoisting Eng.—2-Drum	Tractor Operator (Over 30 hp.)	Power Shovel Operator	Truck Drivers (Over 1½ Tons)
Anderson, Ind.	$1.95	$2.75	$2.33	[4] $1.75	[4] $1.75	$2.25	$1.55	$2.00	$2.00	$2.00	$2.00	$2.15	$2.00	$1.75	$2.00	$2.10	$2.10	$1.75	$1.75	$1.75	*	[5] $2.30	[5] $2.30	$2.10	$2.30	[5] $1.25
Atlanta, Ga.	1.78	2.25	2.00	.90	.95	2.00	.95	2.25	2.00	2.00	2.10	2.25	2.00	1.75	1.50	2.00	2.00	1.50	1.50	1.65	1.75	1.50	1.75	2.00	1.75	1.25
Austin, Tex.	1.88	2.50	2.00	.75		2.50		2.50	2.50	2.50	2.00	2.00	2.25	[6] 1.75	1.63	[7] 2.25		1.50		2.00	2.25	1.75	2.00	2.00	2.00	1.00
Baltimore, Md.	2.90	3.00	2.40	1.25	1.25	3.00	1.35	2.25	2.25	2.25	2.15	2.25	2.25	[8] 1.78	2.05	2.25	2.25	[9] 1.85		2.25	*	1.75	2.20	1.58	2.20	1.15
Baton Rouge, La.	1.88	2.50	2.25	.95			1.10				1.88	2.25	2.25	[6] 1.63	2.00	2.25	2.25			1.75	2.25	1.88	2.25	2.25	2.25	1.25
Birmingham, Ala.	1.80	[10] 2.5	2.08	.95	1.05	2.50	.95	2.20	2.25	1.75	2.08	2.00	2.25	2.00	1.80	2.25	2.25	[6] 1.65	1.90	1.90	*	1.75	2.00	1.75	2.00	1.25
Bismarck, N. D.	1.60	2.25	2.25	[6] 1.15	[6] 1.15	2.25	1.25	2.00		2.25	1.75	1.60	1.75	1.50	1.50	1.75	1.75	1.50	1.50	1.75	*	1.65	1.90	1.50	[6] 1.90	1.25
Boston, Mass.	2.10	2.50	2.40	1.55	1.55	2.50	1.55	2.50	2.25	2.25	2.50	2.50	2.30	2.00	2.00	2.30	2.30	2.15	2.50	2.30	2.30	[7] 2.08	[6] 2.45	2.08	2.45	1.35
Boise, Idaho	1.75	2.25	1.98	1.28			1.63	2.25			1.88	2.13		[6] 1.70		2.00		1.63		1.73	1.43	1.63	1.73	1.63	2.03	1.43
Buffalo, N. Y.	2.25	2.50	2.40	1.65	1.65	2.50	1.75	2.40	2.23	2.23	2.23	2.40	2.37	2.13		2.40	2.40	2.30	2.15	2.25	*	2.35	2.35	1.90	2.40	1.55
Charleston, S. C.	1.63	2.25	2.00	.70	.70	2.50	.75	2.00	2.00	2.00	2.25	2.00	2.25			2.25	2.25	1.50	1.50	2.00	1.56	1.50	1.50		1.25	.85
Charleston, W. Va.	2.13	2.50	2.25	1.30	1.30	2.50	1.45	2.25	2.30	2.30	2.00	2.13	2.25	2.00	1.90	2.00	2.25	1.75	1.75	2.05	2.25	2.25	2.25	1.80	2.25	1.52
Charlotte, N. C.	1.50	2.00	2.00	.88	.88	1.75	[6] 1.25	1.83	2.00	2.00	1.50	1.50	[6] 1.50	1.50	1.50	2.13	2.13	1.50	1.50	1.50	1.50	1.38	1.38	[11] 1.25	1.50	
Cheyenne, Wyo.	1.85	2.40	1.85	[12] 1.00	1.15			2.15			1.90					1.85	2.00	2.00		1.88	2.00	2.00	2.45	2.30	[12] 2.25	1.50	
Chicago, Ill.	2.35	2.40	2.40	1.70	1.70	2.40	1.70	2.40	2.35	2.35	2.35	2.40	2.43	2.30	2.45	2.35	2.35	[6] 2.40	2.40	2.35	2.40	[12] 2.35		2.05	2.65	[6] 1.55
Cincinnati, Ohio	2.20	2.50	2.35	1.40	1.46	2.50	1.66	2.38	2.34	2.34	2.10	2.25	2.38	2.00	2.25	2.35	2.35	2.13	2.25	2.13		2.50	2.50	2.50	2.50	1.30
Cleveland, Ohio	[13] 2.32	2.38	2.38	1.73	1.73		1.73	2.38	2.25	2.25	2.25	2.38	2.38	2.13	2.25	2.38	2.38	2.30	2.30	2.25	*	2.25	2.25			2.38
Columbia, S. C.	1.50	2.00	2.00	.80	.80	2.25	1.25	2.00	2.00	2.00	2.00	1.75	1.75	1.75	1.50	2.25	2.25	1.75	1.75	1.75	2.00	1.50	1.75	1.75	1.75	1.50
Concord, N. H.	1.88	2.00	2.25	1.15	1.15	2.00	1.25	2.00	2.00	2.00	2.00	1.88	1.50	1.35		1.50	1.50	1.88		2.00	2.00	2.15	2.15	1.70	2.15	1.35
Conway, Ark.	1.65	1.65	1.88	.65	.75	2.00	1.25	1.88			1.65	1.88	1.88	1.25		1.88	1.88	1.50			1.50					
Dallas, Tex.	2.25	[6] 2.50	2.25	1.08	1.28	2.25	1.10	[6] 2.13	2.13	2.13	[6] 2.13	2.00	2.00	1.75	2.38	2.38	2.38	1.75	1.88	2.25	2.38	2.00	2.25	2.25	2.25	2.25
Dayton, Ohio	2.15	2.63	2.30	1.40	[6] 1.38	2.63	1.38	2.30	2.25	2.25	1.98	2.30	2.50	2.03	2.08	2.26	2.26	2.15	1.95	2.15		2.15		1.68	2.40	[6] 1.50
Denver, Colo.	2.10	2.25	2.00	1.40	1.35	2.25	1.43	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	[14] 1.72	2.24	2.24	2.10	2.23	2.00	2.00	2.15	2.00	1.50
Des Moines, Iowa.	2.00	2.63	2.13	1.40	1.40	2.63	1.50	2.25	2.00	2.00	2.00	2.20	2.15	1.75	1.65	2.25	2.25	1.50	1.50	2.00	*	1.93	2.10		2.10	
Detroit, Mich.	2.20	2.50	2.40	1.58	1.58	2.50	1.58	2.50	2.28	2.28	2.05	2.50	2.40	2.10	1.90	2.40	2.40	2.28	2.05	2.28	*	2.20	2.40	2.20	2.20	[6] 1.70
Duluth, Minn.	1.80	2.05	2.05	[6] 1.40	[6] 1.40	2.05		2.25		1.90	1.70	2.25	2.10	1.90	1.50	2.00	2.00			2.00		2.00	2.00	[12] 2.00	2.20	1.40
Fort Worth, Tex.	2.00	2.50	2.25	.90	.90	2.50	[7] 1.25	2.50	2.00	2.00	2.00	2.50	2.50	2.25	2.00	2.25	2.25	1.75	1.88	2.25	2.13	2.00	2.25	2.25	2.25	∞
Harrisburg, Pa.	1.83	2.50	2.50	1.20	1.20	2.00	1.38	2.13	2.25	2.00	2.13	2.25	2.00	1.55	1.74	2.25	2.25	1.50	1.50	2.00	2.00	2.13	2.13	1.75	2.65	1.33
Helena, Mont.	2.00	2.00	1.88	1.25	1.38		1.60	2.35			2.25	2.50	1.90	1.75	1.75			1.63		1.63		1.80	2.00	2.00	2.00	1.50
Houston, Tex.	2.00	2.50	2.13	1.08	1.08	2.50	1.28	2.50	2.00	2.00	2.00	2.50	2.38	1.88	1.88	2.38	2.38	[7] 1.88	1.88	2.38		1.88	2.13	1.88	2.13	1.43
Indianapolis, Ind.	2.18	2.45	2.33	1.38	1.20	2.45	1.58	2.35	2.00	2.30	1.95	2.15	2.30	2.00	2.00	2.30	2.30	1.68	1.75	2.13	2.33	2.10	2.30	2.30	2.30	1.43
Jacksonville, Fla.	1.75	2.30	2.00	.80	.90	2.30	.85	2.00	2.30	2.30	1.50	1.50	2.38	1.63		2.50	2.50	1.50	1.50	1.65		2.00	2.00	1.68	1.88	1.25
Jamestown, N. Y.	2.00	2.50	2.13	1.50	[6] 1.65	2.50	2.25	2.50	2.20	2.10	2.50	2.50	1.88	1.75	1.85	2.15	2.15	1.85	1.85	1.85	2.15	2.50	2.68	2.50	2.50	[6] 1.50
Jefferson City, Mo.	2.00	2.38	2.43	1.15	1.15	2.38	1.50	2.00			2.00	2.00		1.63	1.75	2.00	2.00	1.25		1.50	1.15	1.85	2.20	2.20	2.20	1.10
Kansas City, Mo.	2.05	2.50	2.20	1.48	1.48	2.25	1.65	2.50	2.23	2.23	2.05	2.20	2.30	[6] 2.05	2.15	2.38	2.38	1.90	[6] 1.90	2.30	*	[6] 2.05	[6] 2.28	[6] 2.05	2.28	1.50
Little Rock, Ark.	2.50	2.88	2.38	.85	.95	2.25	1.50	2.38	1.88	2.50	2.50	2.25	2.25	1.88	1.88	2.50	2.50	2.00	1.75	1.88	1.88	1.58	1.75	1.50	2.00	[6] 1.10
Los Angeles, Calif.	2.04	2.63	2.30	1.49	1.49	2.63		3.13	2.40	2.50	2.11	[12] 2.50	2.40	2.00	2.00	2.50	2.50	2.25		2.15	*	1.99	1.99	2.04	2.24	[6] 1.56
Milwaukee, Wis.	2.00	2.20	2.05	1.55	1.55	2.20	1.65	2.25	2.20	2.15	1.95	2.25	2.25	1.80	2.00	2.25	2.25	[6] 1.90	1.90	2.05	2.05	2.05	2.05	2.00	2.35	[6] 1.45
Minneapolis, Minn.	2.05	2.25	2.18	1.45	1.45	2.25	1.55	2.35	2.15	2.25	2.15	2.35	2.21	1.95	1.85	2.25	2.25	1.50	1.90	2.15	*	2.00	2.00	[12] 2.00	2.00	1.60
Nashville, Tenn. [15]	1.60	2.25	1.86	.88	.88	2.25	.90	2.25	1.75	1.75	1.75	2.00	2.00	1.63	1.55	1.90	1.90	1.35		1.75	1.90	1.50	1.80	1.80	1.85	[6] .90
New Orleans, La.	1.88	2.50	2.25	1.03	1.03	2.50	1.13	2.00			1.88	2.00	2.30	1.63	1.80	2.25	2.25	1.73	1.63	1.96	2.13	2.13	2.13	1.88	2.13	1.08
New York, N. Y.	[6] 2.75	[6] 3.20	3.00	1.70	1.70	[6] 2.75	[6] 1.95	[6] 3.20	2.75	2.75	[6] 2.75	[6] 2.75	[6] 3.00	[6] 2.45	[6] 2.75	[6] 3.00	[6] 2.75	[6] 2.75	[6] 2.75	[6] 2.75		[6] 2.50	[6] 2.75	[6] 2.38	[6] 3.13	1.64
Newark, N. J. [16]	[6] 2.0	[6] 3.25	3.10	[6] 2.13				[6] 3.13	[6] 3.25	2.75	[6] 3.25	2.75	3.00	[6] 2.50	2.60	2.50	2.50	[6] 2.85	2.85	2.75		3.00	3.00	2.25	3.00	[6] 1.56
Norfolk, Va.	1.75	2.00	2.15	.80	.80	2.00	.80	2.50	1.75	1.75	1.50	2.50	2.00	1.75	1.75	2.00	2.00	1.75	1.50	1.75	*	1.63	1.88	[11] 1.88	1.88	1.00
Oklahoma City, Okla.	2.00	2.25	2.25	1.25	1.10	2.25	1.50	2.75	2.25	2.25	2.50	2.75	[6] 2.63	[6] 2.12	[6] 2.12	[6] 2.50	[6] 2.50	1.75	1.75	2.00	1.87	2.00	2.25	2.00	2.25	1.37
Omaha, Neb.	2.07	2.40	2.28	1.28	1.28	2.40	1.28	2.40	1.95	2.10	2.08	2.28	2.20	1.85	1.70	2.15	2.15	1.83	1.83	2.00	2.10	2.00	2.28	2.28	2.28	1.28
Philadelphia, Pa.	2.25	[6] 2.75	2.65	1.25	1.55	2.40	1.25	3.03	2.40	2.40	2.25	2.50	2.75	[6] 2.05	2.09	2.50	2.50	[6] 2.15	[6] 2.10	2.50	*	[6] 2.50	[6] 2.50	[6] 2.13	[6] 2.75	1.65
Phoenix, Ariz.	2.10	3.00	2.10	1.45	1.45	3.00	1.82	2.25	3.00	3.00	2.10	2.50	2.25	1.97	1.97	2.25	2.25	1.75	3.00	1.90	2.05	1.98	1.98	2.03	2.23	1.55
Pierre, S. D.	[6] 1.75	[6] 2.25		1.00	1.00	[6] 2.25	1.00	[6] 2.25	[6] 2.75	[6] 2.25	1.75	1.50	[6] 1.85	[6] 1.50		[6] 2.00	2.00	[6] 1.50		[6] 1.50	[6] 1.43	[6] 1.50	[6] 1.83	[6] 1.83	[6] 1.10	
Pittsburgh, Pa.	2.50	2.70	2.50	1.50	1.75	2.70		2.63	2.50	2.13	2.50	2.63	2.38	2.20	2.00	2.50	2.50	2.25	2.25	2.50		2.65	2.55	2.65	2.65	[6] 1.50
Portland, Ore.	2.10	2.75	2.30	1.70	1.65	2.75	2.00	2.65	2.38	2.13		2.50	2.35	2.10	1.96	2.38	2.38	2.20	2.20	2.15	1.90	2.00	[6] 2.30	2.00	[6] 2.35	1.70
Providence, R. I.	1.90	2.45	2.25	1.40	1.40	2.45	1.40	2.50	2.25	2.25	2.00	2.25	2.00	1.75	2.00	2.25	2.25	1.80	2.50	2.15	1.50	1.83	1.83	1.98	1.98	2.50
Raleigh, N. C.	1.50	[6] 2.00	1.50	.75	[6] 1.00	[6] 2.00	.85	[6] 1.75	2.00	2.00	1.50	1.75	1.75	1.50		2.25	2.25	1.35		1.50						
Richmond, Va.	1.80	2.50	2.25	.90	1.15			2.25	1.63	1.63	1.78	2.13	2.00	1.63	1.63	2.25	2.25			1.88		1.75	2.03	1.88	1.75	1.00
St. Louis, Mo.	2.45	2.75	2.43	1.50	1.40	2.50	1.80	2.50	2.30	2.18	2.50	2.50	2.50	2.32	2.50	2.50	2.50	2.13	2.50	2.50	2.50	2.04	2.55	2.55	2.55	1.80
St. Paul, Minn.	2.05	2.25	2.18	1.45	1.45	2.25	1.55	2.30	2.15	2.25	2.00	2.30	2.21	1.90	1.85	2.25	2.25	1.90	1.90	2.15	*	2.00	2.00	[12] 2.00	2.00	1.60
St. Petersburg, Fla. [16]	1.50	2.25	1.75	1.00	.75	2.00	1.25	2.25	2.25	2.25	1.75	1.75	2.25	1.50	1.50	2.00	2.00	1.50	1.50	2.00	2.00	1.50	1.50	1.50	1.50	1.00
Salt Lake City, Utah	1.80	2.25	2.00	1.28	1.28	2.25	1.65	2.25	2.05	2.05	1.83	2.25	2.00	[6] 2.00	1.56	2.00	2.00	1.75	1.75	1.88	*	1.75	1.85	1.90	2.05	1.50
San Antonio, Tex.	2.00	2.25	2.00	.90	.90	2.25	1.17	2.50	2.00	2.00	2.25	2.50	2.25	1.75	1.75	2.38	2.13	1.38	2.03	2.25	*	[6] 1.50	[11] 1.73	1.50	1.50	1.00
San Diego, Calif.	2.04	2.50	2.24	1.49	1.49	2.50	1.75	[6] 2.50	2.50	2.50	2.11	[6] 2.50	2.38	2.10	1.96	2.50	2.50	2.16	1.90	2.18	*		[11] 1.93	2.04	2.24	1.56
San Francisco, Calif.	2.16	2.81	2.40	1.53	1.53	2.87	2.25	[6] 2.34	2.00	2.68	2.15	2.81	2.50	[6] 2.46	2.00	2.38	2.38	2.16		2.13	2.15	[6] 2.13		2.23	[6] 2.53	1.78
Seattle, Wash.	2.20	2.50	2.40	1.80	1.70	2.50	2.05	2.50	2.25	2.25	2.20	2.40	2.20	2.15	2.50	2.50	2.50	2.20	2.20	2.35	2.35	2.33	2.33	2.38	2.63	[6] 2.38
Springfield, Ill.	2.13	2.75	2.25	1.45	1.45	2.75	1.55	2.50	1.50		2.13	2.13	2.38	2.00	2.00	2.50	2.50	2.03	2.05	2.10	*	1.75	2.15	2.15	2.15	1.75
Tacoma, Wash.	2.19	2.63	2.25	1.81	1.81	2.38	2.05	2.25	2.25	2.25	2.18	2.15	2.40	2.19	1.96	2.34	2.34	2.06	2.06	2.21	*	2.20	2.20	1.95	[6] 2.80	[6] 2.25
Toledo, Ohio.	2.18	2.40	2.40	1.60		2.40	1.72	2.40	2.40	2.40	2.40	2.40	2.40	[6] 2.03	1.70	2.38	2.38	2.13	2.40	2.13	*	2.15	2.15	1.83	2.40	[6] 1.48
Topeka, Kan.	1.75	2.25	2.20	1.10	1.10	2.25	1.15	2.25	2.25	2.25	1.98	2.00	2.00	1.80	1.65	2.25	2.25	1.65	2.25	1.95	*	1.63	2.00	1.75	1.90	1.20
Trenton, N. J.	2.50	2.65	2.75	1.60		2.65	1.60	2.65		2.65	2.65	2.50	2.75	2.00	2.09	2.50	2.50	2.25	2.25	2.50		3.00	2.25	3.00		
Tulsa, Okla.	2.25	2.50	2.25	1.25	1.15	[6] 2.50	[6] 1.50	[6] 2.75	[6] 2.25	2.25	2.62	2.75	[6] 2.25	[6] 2.25	[6] 2.25	[6] 2.75	[6] 2.75	2.00	2.00	2.25	2.00	2.00	2.25	2.00	2.25	1.60
Wilmington, Del.	2.25	2.75	2.65	1.30	1.30	2.80	1.55	2.50	2.25	2.25	2.25	2.25	2.50	1.93	2.09	2.40	2.40	[6] 2.50		2.25			3.00	2.25	3.00	
																										1.50

NOTE: Hourly rates are rounded to the closest cent where fractional parts of cent are quoted. * Same as craft doing work. [1] Up to 3 tons. Over 3 tons, $1.50. [2] $18 per day. [3] Brush. Spray and steel, $1.86. [4] Composition. Slate or tile, $2.15. [5] Brush. Steel and sign, $2.00; spray, $2.25. [6] Composition. [7] Up to 3 stories. [8] High speed over 3 stories. [9] Brush. Spray, $1.83. [10] 40-hp. [11] 2½ yds. and smaller. [12] 4-drum. [13] Less than 2 tons. [14] Plus 5¢ per hr. for tool replacement. [15] Inside. Outside, $1.89. [16] Dump truck. All other, $1.60. [17] Composition. Slate and tile, $2.13. [18] Brush. Spray, $2.30. [19] Spray. [20] Light. [21] Heavy. [22] Over 50-hp. [23] Metal. [24] 6 tons and under. [25] Man. and Bronx, 7-hr. day. Brooklyn and Queens, $2.81; 8-hr. day. [26] Slate and tile. [27] $100 per week. [28] $110 per week. [29] $95 per week. [30] $125 per week. [31] With attachments. Without attachments, $1.63. [32] Brush. Other, $2.18. [33] Composition. Slate and tile, $2.50. [34] 1–8 cu. yds. [35] Elevator. [36] Material hoist. [37] Up to and including 1 yd. Over 1 yd., $2.63. [38] Dump truck. [39] No local unions. [40] Retroactive to May, 1948. [41] Brush. Spray, $2.38. [42] 7-hr. day. [43] 6-hr. day. [44] On compulsory 7-hr. day. [45] Composition. Slate and tile, $2.55. [46] Overtime paid double, Carpenters double plus ½ paid holidays, painters double plus 7½¢ per hr. w. f. [47] $5–10/day bonus from some contractors (up for adjustment, 1949).

WAGE RATE RANGES: [a] $1.55–$2.30. [b] $1.63–$1.75. [c] $1.05–$1.15. [d] $1.65–$1.90. [e] $1.75–$2.50. [f] $.90–$1.25. [g] $1.50–$1.75. [h] $1.00–$1.50. [i] $1.50–$2.00. [j] $1.50–$1.80. [k] $1.25–$1.63. [l] $1.25–$1.50. [m] $1.30–$1.40. [n] $2.00–$2.25. [o] $2.25–$2.75. [p] $1.75–$2.00. [q] $1.75–$2.25. [r] $1.65–$1.83. [s] $1.00–$1.10. [t] $1.75–$1.90. [u] $1.80–$2.25. [v] $2.50–$2.80. [w] $1.50–$1.65. [x] $1.38–$1.50. [y] $1.93–$1.38. [z] $1.45–$1.50. [aa] $1.10–$1.25. [bb] $.90–$1.00. [cc] $1.93–$2.38. [dd] $1.35–$1.75.

YOUR COMMUNITY

needs the safety

and lasting dependability of

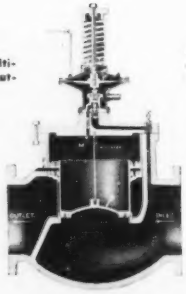
GOLDEN-ANDERSON

positive control **VALVES**

Sensitive Golden-Anderson Altitude Control Valves maintain water levels within 3" to 12" variations, and may be arranged with special equipment to perform a variety of other services.

Inherent water cushioning prevents shock or jar under varying flow conditions. These Valves are easily adjusted for any water level, and include an indicator which shows piston position at all times. Some models actually are two valves in one—a regular automatic Altitude Control Valve as well as a Reverse Flow Check Valve.

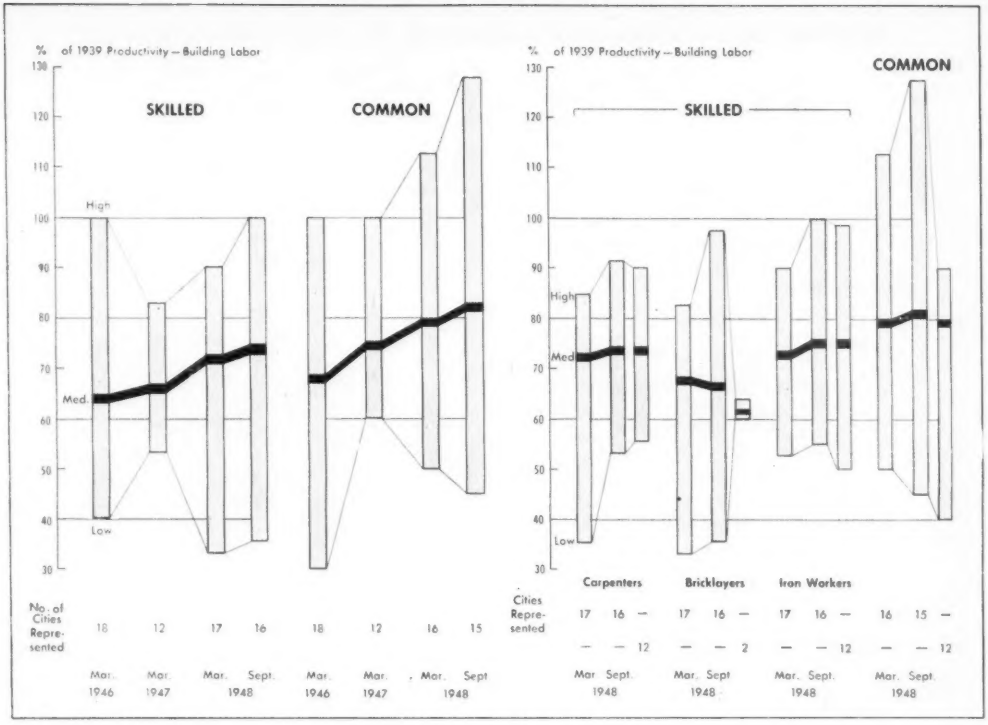
Let Golden-Anderson protect life and property through *absolute, safe control* of difficult flow conditions.



G-A Single Acting Altitude Valve, Globe Pattern.

GOLDEN-ANDERSON *Valve* Specialty Co.
Keenan Building, Pittsburgh 22, Pa.

LIFE AND PROPERTY PROTECTION
VALVES SINCE 1905


% of 1939 Productivity — Building Labor
SKILLED
COMMON
High
Med.
Low
No. of Cities Represented
18 12 17 16 18 12 16 15
Mar. 1946 Mar. 1947 Mar. Sept. 1948 Mar. 1946 Mar. 1947 Mar. Sept. 1948
% of 1939 Productivity — Building Labor
SKILLED
COMMON
Carpenters
Bricklayers
Iron Workers
Cities Represented
17 16 — 17 16 — 17 16 — 16 15 —
— — 12 — — 2 — — 12 — — 12
Mar. Sept. 1948 Mar. Sept. 1948 Mar. Sept. 1948 Mar. Sept. 1948

Labor Productivity Continues Slow Rise

Skilled building labor productivity inched up to 73 percent of 1939, and common labor to 82 percent in September, 1948, but improvement continued to be somewhat spotty. These median figures for 16 cities compare with 71 percent for skilled labor, carpenters, bricklayers and ironworkers, in March 1948 and 80 percent for common labor reported from 17 cities in March, 1949.

The highest productivity reported for September, 1948 is 100 percent of 1939 for skilled labor (in Denver) and 128 percent for common labor (in New Orleans).

Reports to ENGINEERING NEWS-RECORD from 35 building contractors in large cities and from 4 building contractors working in 12 areas away from large cities are in substantial agreement. Also comments of individual contractors, when analysed, support as well as amplify the "statistics."

A majority of these contractors report that productivity is up or up slightly. Less than one third report that it is not improving. A few report that improvement is mixed or spotty. One contractor reports that "trades are evening up," another that "more good men are available," another that "men are becoming better trained and more experienced," another that "supply of labor is better but output per man has not improved."

By trades, carpenters seem to have made the best overall gain, bricklayers and the trowel trades the least. One contractor reported "bricklayers static," another "bricklayers scarce but producing better."

A majority reports that ironworkers productivity is increasing but one reports that it is declining. Another says, "Steel erectors are hard to get, skilled riveting gangs almost impossible to get, heaters are short and available only in big cities, those you get are inexperienced and incompetent."

By cities, better than average productivity for skilled labor in September, 1948, compared with 1939, is reported from Atlanta, Boston, Los Angeles, Minneapolis, New Orleans, New York and St. Louis. For common labor better than average productivity is reported in Cleveland, New Orleans, New York, St. Louis, and San Francisco.

Reports for 12 areas away from large cities show 73 percent median for

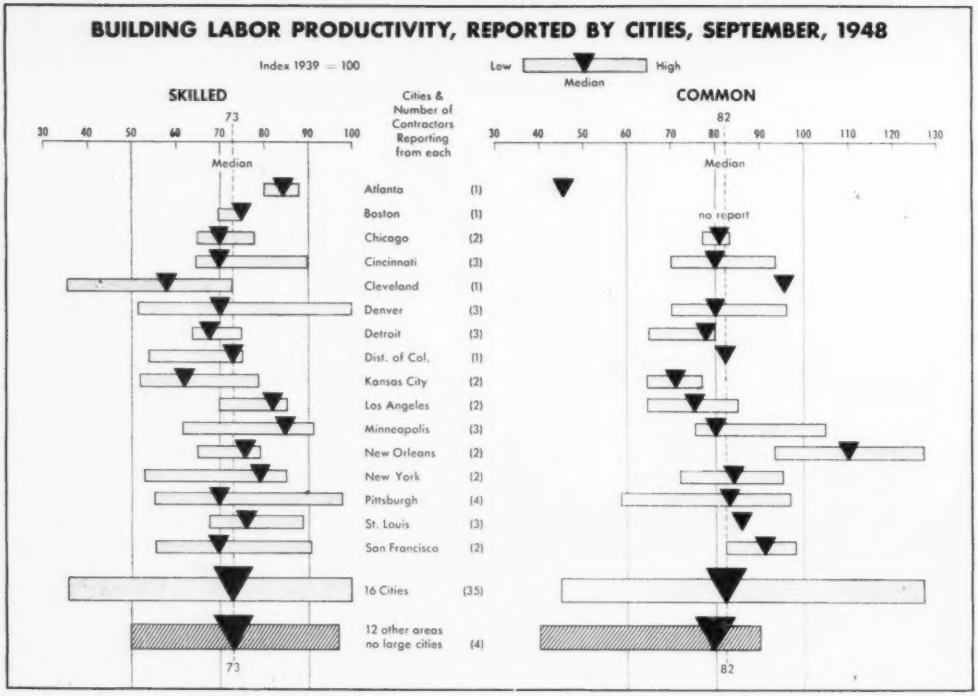
Table I Productivity by Trades 1939 = 100

	1948 1st Qtr. Low	Median	High
Carpenters	36	72.5	85
Bricklayers	33	69	81.5
Ironworkers	52.5	73	90
3 Skills Combined	33	71	90
Common	50	80	112
	1948 3rd Qtr. Low	**Median**	**High**
Carpenters	53	73	91
Bricklayers	36.5	68	97
Ironworkers	55	76.4	100
3 Skills Combined	36.5	73	100
Common	45.5	82	128

Formula Used for Computing Changes in Labor Productivity

$$\frac{\text{1948 Theoretical Cost}}{\text{1948 Actual Cost}} = \text{Productivity \% of 1939}$$

Theoretical cost = $1 unit of work in 1939 plus percent increase in hourly wage rate for trade studied
Actual cost = present cost from experience records of the same unit of work that cost $1 in 1939



skilled productivity compared with 73 percent in the 16 reporting cities and a low-high range of 50-98 compared with the range of 36-100 in the cities covered.

Common labor in the 12 areas away from large cities is not so closely comparable. A median of 80 compares with the city median of 82 and the low-high range of 40-90 compares with the city range of 45.5-128.

The nine matching cities reported in Table II show lower medians, 70 for skilled and 80 for common, than the 73 and 82 for all 16 cities.

Skilled labor productivity is reported higher than this group median in Los Angeles, St. Louis, Minneapolis and New York City. Common labor is more productive than this median in St. Louis, Cleveland, Pittsburgh and New York City. Pittsburgh reports the highest high productivity for skilled trades, with 98 percent of 1939. Minneapolis is high for common, with 106.5 of 1939.

Costs Forecasts

Late in 1948, and before the break in lumber prices could be positively defined as sustained, the majority of contractors reporting expected building costs to rise in the first half of 1949. Rises of 4 percent, 5 percent, one of 10 percent were predicted by this group. A small minority thought costs would stabilize or show very little change. One third thought costs would go down slightly, one contractor predicted 3 to 5 percent, another "stable to down 5 percent." Contractors predicting increases noted "because of wage increases." One, forecasting a decrease, qualified with "unless the 4th round of wage increases starts."

For the second half of 1949 almost half the contractors thought costs would stabilize or level off. A third thought they would level off or tend to go down some, one thought as much as 5 percent. One fourth of those reporting thought a rise could be expected. One contractor estimated that "with wage increases, costs will go up 10 percent," another that 2nd half costs would be up 20 percent from 1948. Another contractor felt that costs would rise because of the large volume of work.

Since these predictions, lumber prices have continued their gradual decline, the cost of living has continued down, scrap iron prices have dropped drastically.

Table II Building Labor Productivity in 9 Matching Cities 1939=100

City	Date of survey	Skilled Labor Low	Med.	High	Common Labor Low	Med.	High
New York	3rd '48	53	80	85	71	83	95
	1st '47	36	70.8	85	57	90	96
	1st '47	62	64.5	67	62	67.5	73
	1st '46	60	64	75	50	60	75
Pittsburgh	3rd '48	56	70	98	59	83.3	99
	1st '48	70	79	94	93	93	93
	1st '47	65	73	81	68	83	97
	1st '46	55	68	91	70	75	90
Cleveland	3rd '48	36	58	73	96	96	96
	1st '48	73	73	77	95.5	95.5	95.5
	1st '47	57	57	57	64	64	64
	1st '46	60	68	75	60	72	80
Cincinnati	3rd '48	65	70	90	70	80	93
	1st '48	66.7	70	79	68.7	78	80
	1st '47	71	75	75	60	70	80
Detroit	3rd '48	63	68	75	66	78	80
	1st '48	50	64.8	77	66.7	80	80
	1st '47	52	63	75	60	77.5	90
	1st '46	50	61	80	50	62	85
Minneapolis	3rd '48	61	85	91	78	80	106.5
	1st '48	50	65.5	66.5	80.5	80.5	80.5
	1st '47	54	66	72	75	77.5	80
	1st '46	60	67	80	60	68	75
St. Louis	3rd '48	69	76	80	86	86	86
	1st '48	59	66	72	66.5	73	80
	1st '47	59	64	81	66	80	92
	1st '46	50	65	75	50	68	80
Kansas City	3rd '48	52	62	79	64.5	71	77
	1st '48	52	69	80	62.2	76	80
	1st '47	62	67	71	72	77	92
	1st '46	40	70	85	60	67	85
Los Angeles	3rd '48	70	82	85	64	75	85
	1st '48	74	74	74	65	65	65
	1st '47	80	80	80	75	75	75
	1st '46	55	55	55	60	60	60
9 Cities	3rd '48	36	70	98	59	80	106.5
	1st '48	36	70	85	57	80	96
	1st '47	52	66	83	60	77	97
	1st '46	40	67	91	50	68	90

Economy STEEL FORMS

for concrete construction

A NATIONWIDE FORM RENTAL and ENGINEERING SERVICE ... saves LABOR - MATERIAL - TIME

- treatment plants water • sewage
- tanks – circular and rectangular
- bridges • culverts
- box tunnels
- buildings
- special forms

ECONOMY STEEL FORMS

Let our Engineers help you with your Concrete Forming Problems

ECONOMY FORMS CORP. . . . Home Office: Des Moines, Iowa

District Offices: Metuchen, N. J. . . Decatur, Ga. . . Fort Wayne, Ind. . . Dallas, Texas . . Denver, Colo. . . Los Angeles, Calif.

More Than 250,000 HOMELITE UNITS

Pumps · Generators · Chain Saws · Blowers · Paving Breakers

Are on the Job

Everywhere

HOMELITE PUMPS

Everywhere . . . even in the most remote places . . . wherever water has to be pumped out fast and with *the least trouble* you'll find Homelite Carryable Gasoline-Engine-Driven Pumps in action.

HOMELITE GENERATORS

For operating electric tools . . . both high-cycle and standard 110 volt . . . and for operating floodlights, Homelite Carryable Gasoline-Engine-Driven Generators are the ever-ready, ever-dependable favorites everywhere.

HOMELITE CHAIN SAWS

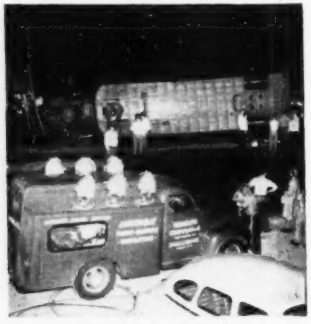
Lightweight, compact, safe and easy to handle, these one-man, high-cycle electric chain saws have super-fast cutting power and are rugged and dependable for all types of cutting on both tree work and construction jobs.

HOMELITE PAVING BREAKERS

More and more the new 84-lb. Homelite *Electric* Paving Breaker is being enthusiastically received by those who want a fast, efficient breaker that is compact and easy to move.

HOMELITE BLOWERS

Where ejecting smoke or supplying fresh air is a must for safety and efficiency, Homelite Carryable Gasoline-Engine-Driven Blowers are constantly on the job.



HOMELITE SERVICE

In all parts of the country Homelite representatives are ready to demonstrate the advantages of Homelite units and to service most efficiently all Homelite equipment.

Homelite Corporation

1103 RIVERDALE AVENUE, PORT CHESTER, NEW YORK

Manufacturers of
Homelite Carryable Pumps • Generators • Blowers • Chain Saws • Paving Breakers

See how Homelite Equipment can save time, trouble and money for you. Send for descriptive bulletins on any or all of the equipment shown above.

BASE RATES ON COMPENSATION INSURANCE FOR CONSTRUCTION—FEBRUARY 1, 1949

Data Compiled by Herbert L. Jamison & Co., Insurance Advisers and Auditors, New York, N. Y.
(Base rates in effect February 1, 1949—subject to increase or decrease according to experience ratings)

Classification of Work (A)	Ala.	Alas.	Ariz.	Ark.	Cal.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.(L)	Ind.	Iowa	Kans.	Ky.	La.	Me.	Md.	Mass. (L)	Mich.	Minn.	Miss.	Mo.	Mont.	Neb.
1. Carpentry — private residence	1 30	3 47	5 56	4 28	3 93	2 10	4 05	1 30	2 40	(Z)	1 33	2 61	2 34	2 18	2 61	2 04	2 91	4 36	1 79	1 90	2 75	(Z)	2 86	4 43	3 42	3 14	2 70
2. Carpentry — 3 stories or less	1 30	3 95	5 56	4 28	3 93	2 10	4 05	1 30	2 53	(Z)	1 33	2 61	3 07	2 62	2 61	2 62	2 91	4 44	1 79	2 09	2 75	(Z)	2 86	4 43	3 42	3 14	2 70
3. Carpentry — interior trim	74	2 34	5 56	2 04	3 93	93	2 02	1 30	1 81	1 18	98	1 29	1 21	1 03	1 07	1 20	1 34	1 89	1 02	1 85	1 65	2 00	2 86	2 09	3 42	1 54	1 17
4. Carpentry — general	1 56	7 94	5 56	5 41	3 93	2 77	5 06	1 30	3 52	2 33	2 73	4 07	3 65	2 62	2 61	3 64	3 52	4 58	3 04	3 69	6 19	3 40	2 86	5 57	3 42	5 02	2 70
5. Concrete or cement walk laying (B)	93	2 76	3 59	2 24	1 45	1 13	2 05	90	1 50	1 55	1 45	1 60	1 35	1 21	1 24	1 48	1 58	2 32	1 27	2 06	1 73	1 60	1 44	2 28	2 24	1 89	1 43
6. Concrete work — general (B)	2 33	7 14	(X) 4 94	4 23	3 11	2 62	5 17	1 30	4 03	2 60	2 00	4 23	2 90	2 28	2 88	(X) 3 89	3 15	4 78	2 43	3 18	4 01	3 21	2 20	4 34	3 55	4 58	2 48
7. Concrete work — dwellings — 3 stories or less (B)	89	6 75	(X) 4 94	2 68	1 45	2 03	3 08	1 30	3 63	1 88	95	2 08	2 17	1 36	1 41	2 10	1 53	2 86	1 84	2 11	4 56	1 65	1 60	2 73	2 69	2 47	1 70
8. Concrete — bridges	3 21	(J)	(J)	8 88	5 46	3 79	9 50	1 30	8 13	4 38	4 00	5 74	4 14	4 08	5 68	4 76	5 30	5 76	6 01	5 93	8 00	5 11	5 90	9 11	9 60	7 00	5 08
9. Electric wiring	1 19	1 83	2 83	1 90	2 19	1 15	1 89	1 00	1 53	1 32	1 33	1 45	1 21	1 05	1 51	1 25	1 52	1 61	1 00	1 73	1 32	1 23	1 01	1 94	1 83	1 70	1 48
10. Excavation — earth (C)	1 70	3 82	5 61	3 88	2 11	3 12	3 66	90	2 78	1 95	1 48	4 43	1 87	1 41	2 00	2 81	2 50	2 13	2 57	2 58	3 68	2 03	2 36	4 00	3 26	5 06	1 81
11. Excavation — rock (D)	2 61	9 09	10 22	7 02	5 01	3 22	7 05	90	6 04	4 35	3 47	5 22	4 25	3 63	3 53	4 64	4 98	6 50	3 23	4 57	7 90	4 70	4 88	8 61	7 71	5 81	4 42
12. Glazing	2 13	4 33	5 52	5 17	5 18	2 88	5 38	55	4 19	3 43	2 58	3 81	2 96	2 90	2 85	3 48	3 96	5 19	2 72	3 65	3 80	3 40	3 77	5 30	4 80	4 63	3 28
13. Insulation	98	3 50	(J)	2 96	2 76	1 52	2 33	(J)	2 38	1 60	1 06	2 16	1 80	1 71	1 76	1 99	2 15	2 49	1 59	1 93	2 84	1 88	1 98	3 06	2 84	2 57	1 92
14. Lathing	99	3 50	4 07	2 70	2 76	1 23	2 63	60	1 95	1 41	1 28	1 76	1 38	1 36	1 38	1 62	1 82	2 49	1 33	1 77	2 39	1 78	1 62	2 76	3 46	2 12	1 58
15. Masonry	89	5 95	4 39	2 68	2 24	2 03	3 08	90	2 32	1 88	95	2 08	2 29	1 36	1 41	2 10	1 53	2 86	1 84	2 11	4 56	1 65	1 60	2 73	2 69	2 47	1 70
16. Painting (I)	1 51	4 77	4 16	3 48	3 89	2 02	4 29	1 10	2 89	1 93	1 61	2 97	1 92	2 00	2 12	2 39	2 33	3 28	1 67	2 72	(J)	2 63	2 06	3 56	3 40	3 62	2 27
17. Plastering — interior	98	3 50	3 57	2 96	2 76	1 52	2 33	60	2 38	1 60	1 06	2 16	1 80	1 71	1 76	1 99	2 15	2 71	1 59	1 93	2 84	1 88	1 98	3 06	2 84	2 57	1 92
18. Plumbing	69	1 82	3 00	1 88	1 45	1 01	2 18	65	1 58	1 25	91	1 54	1 25	1 23	1 18	1 22	1 43	2 21	1 36	1 62	1 61	1 50	1 49	1 94	1 78	1 83	1 59
19. Pile driving other than wharf	5 05	9 10	15 56	13 88	9 04	6 75	6 18	(J)	9 26	5 51	5 19	9 76	5 74	6 76	5 50	9 10	9 89	15 26	3 35	5 17	(X) 4 89	8 70	7 19	14 24	19 15	11 96	8 52
20. Roofing	3 46	8 95	9 29	8 24	7 54	4 41	9 59	1 40	7 49	3 94	3 31	7 31	4 78	4 67	6 61	7 04	5 97	7 98	6 25	7 32	8 90	6 81	5 84	8 52	7 39	8 91	7 21
21. Sheet metal erection	1 41	3 04	4 08	3 33	3 04	1 67	3 52	1 40	2 53	2 11	1 46	2 19	2 08	1 91	1 98	1 82	2 67	3 82	1 56	2 07	1 86	1 66	1 55	3 39	2 53	2 61	2 35
22. Steel erection — general	5 35	11 05	20 31	14 89	6 88	6 94	9 86	3 10	15 81	6 36	5 53	10 41	5 96	3 88	9 46	8 20	8 20	10 71	7 04	7 65	13 70	6 06	7 78	15 22	11 09	12 63	8 69
23. Steel erection — structural	6 48	19 60	20 31	16 22	13 32	11 26	14 31	3 10	21 05	9 24	8 04	14 69	9 32	6 97	12 10	11 63	13 27	10 71	7 95	9 49	16 37	17 57	8 23	16 64	20 27	18 23	11 34
24. Steel erection — interior ornamental	1 45	4 59	3 89	3 80	3 49	1 77	3 77	1 60	3 69	2 26	1 80	(Z)	2 33	1 98	1 95	2 37	2 63	3 66	1 92	2 58	2 94	2 36	2 65	3 93	4 28	3 06	2 24
25. Steel erection — dwellings 2 stories or less	3 30	10 77	8 04	9 01	13 32	4 50	8 84	3 10	6 99	5 58	4 33	6 70	5 80	3 61	4 63	6 12	6 77	7 65	4 69	6 28	(J)	6 82	5 90	9 26	10 44	8 26	5 24
26. Steel sash and door	1 36	5 21	3 89	3 33	3 49	1 69	3 64	3 10	2 69	2 33	1 73	(Z)	2 78	1 88	1 87	2 24	2 55	3 47	1 83	2 42	2 94	2 55	2 53	3 44	3 63	2 92	2 16
27. Tile marble or stone setting interior	66	1 11	2 46	1 74	1 47	79	1 77	35	2 00	89	(Z)	1 11	1 05	88	91	1 03	1 14	1 63	90	1 33	1 41	1 60	1 22	1 78	1 91	1 32	1 02
28. Watchmen and timekeepers (H)	1 46	5 95	1 99	3 18	(F)	1 81	3 91	(J)	2 77	2 33	1 90	2 53	2 45	1 98	2 03	2 37	2 57	3 70	1 95	2 56	3 10	2 51	2 68	3 26	4 30	3 01	2 30
29. Waterproofing: Application by means of brush	1 51	4 77	4 16	3 48	3 89	2 02	4 29	(J)	2 89	1 93	1 61	2 97	1 92	2 00	2 12	2 39	2 33	3 28	1 67	2 72	(J)	2 63	2 06	3 56	3 60	3 62	2 27
Application by means of trowel (Int.)	98	3 50	3 57	2 96	2 76	1 52	2 33	(J)	2 38	1 60	1 06	2 16	1 80	1 71	1 76	1 99	2 15	2 71	1 59	1 93	2 84	1 88	1 98	3 06	2 84	2 57	1 92
Application by means of trowel (Ext.)	89	5 95	4 39	2 68	2 24	2 03	3 08	(J)	2 32	1 88	95	2 08	2 29	1 36	1 41	2 10	1 53	2 86	1 84	2 11	4 56	1 65	1 60	2 73	2 69	2 47	1 70
Application by means of pressure gun	2 33	7 14	(X) 4 94	4 23	3 98	2 62	5 17	(J)	4 03	2 60	2 00	4 23	2 90	2 28	2 88	3 89	3 15	4 78	2 43	3 18	4 01	3 21	2 20	4 34	3 55	4 58	2 48
30. Wrecking	8 46	15 99	28 43	20 69	17 88	10 43	20 95	9 00	16 69	11 93	10 41		12 04	7 59	11 42	9 84	15 54	29 54	10 91	13 00	(X) 16 32	25 04	11 32	21 28	17 71	18 47	13 14

Classification of Work (A)	Nev. (E)	N. H.	N. J.	N. M.	N. Y.	N. C.	N. D.(E)	Ohio (E, M)	Okla.	Ore. (G)	Pa.	R. I. (L)	S. C.	S. D.	Tenn.	Texas	Utah	Vt.	Va.	Wash. (G)	W. Va. (E)	Wisc.	Wyo. (E)
1. Carpentry — private residence	State Insurance Plan Nevada Industrial Commission, Carson City, Nev. Rates publ. ENR, May 27, 1948 p. 157 apply until July, 1949. Reckest for possible revision then.	2 39	3 10	2 21	Z	1 38	North Dakota State Plan Workmen's Compensation Bureau, Bismarck, N. D. Rates publ. ENR, May 27, 1948 p. 157 apply except effective July 1, 1949 a 5% to 35% discount is allowed on renewal premiums, depending on coverage period.	1 01	4 28	6 36	1 55	5 85	2 93	1 53	1 87	2 82	(Z)	1 83	1 91	4 59	West Virginia State Plan: State Compensation Commissioner, Charleston, W. Va. See ENR, May 27, 1948 p. 157 for rates.	3 42	Wyoming State Plan: Manager, Workmen's Compensation Department, Capitol Building, Cheyenne, Wyoming. Rates publ. ENR, May 27, 1948 p. 157 apply except new requirements for non-resident employees (Y)
2. Carpentry — 3 stories or less		2 39	3 60	2 21	Z	1 82		1 01	4 28	6 36	1 55	5 85	2 93	1 53	1 87	(Z)	(Z)	1 83	1 91	4 59		3 42	
3. Carpentry — interior trim		1 31	2 10	98	Z	1 28		97	2 56	2 94	1 55	4 40	1 90	1 13	1 24	2 17	(Z)	81	97	1 50		3 42	
4. Carpentry — general		4 68	4 60	3 01	6 42	2 54		97	5 93	7 49	1 55	12 70	5 75	1 47	3 02	3 66	1 70	2 52	2 52	6 08		3 42	
5. Concrete or cement walk laying (B)		1 60	(X) 1 90	1 23	(X) 3 70	1 19		75	2 88	3 19	1 75	5 29	2 66	1 37	1 42	(Z)	1 42	1 01	90	2 30		2 08	
6. Concrete work — general (B)		4 42	(X) 5 20	2 31	(X) 6 29	2 22		1 01	5 96	6 69	2 25	7 20	5 99	2 34	1 97	3 66	(X) 3 11	2 21	1 98	5 15		3 19	
7. Concrete work — dwellings — 3 stories or less (B)		2 86	(X) 5 10	1 50	Z	1 31		1 01	4 13	5 83	2 25	6 29	2 12	1 39	1 48	(Z)	(Z)	2 30	2 04	4 48		2 24	
8. Concrete — bridges		6 35	(X) 5 60	4 76	9 37	5 06		1 48	11 58	9 84	2 25	19 80	12 06	4 29	(Z)	(Z)	5 13	3 55	3 80	7 57		6 39	
9. Electric wiring		1 37	1 36	1 03	3 67	1 36		69	2 35	2 29	1 00	3 01	2 35	1 19	1 24	2 22	1 45	89	1 10	2 53		1 69	
10. Excavation — earth (C)		3 03	(X) 4 30	3 84	5 61	1 41		91	4 20	7 46	1 75	10 52	3 32	2 09	2 05	(Z)	2 86	2 43	1 50	5 39		3 78	
11. Excavation — rock (D)		4 60	8 09	3 40	(X) 11 31	6 15		1 80	8 88	(J)	1 75	16 42	7 60	3 85	5 07	7 15	4 03	2 78	3 44	10 49		6 67	
12. Glazing		3 55	4 60	2 72	9 70	3 24		1 35	7 10	6 73	1 00	13 09	6 11	2 75	3 36	5 47	1 15	2 22	2 54	5 17		5 74	
13. Insulation		2 11	2 85	1 57	5 17	1 59			3 95	5 72	(Z)	7 08	3 24	1 73	1 65	2 84	3 09	1 30	1 43	4 04		2 73	
14. Lathing		1 72	2 85	1 33	3 29	1 56		56	3 40	5 72	85	6 08	2 83	1 42	1 65	2 91	1 75	1 07	1 24	4 04		2 99	
15. Masonry		2 11	4 30	1 50	5 97	1 31		1 48	4 13	5 83	1 35	6 29	2 12	1 39	1 48	3 66	1 92	2 04	1 10	4 48		2 24	
16. Painting (I)		2 85	(X) 5 30	2 07	8 17	1 82		1 35	4 10	6 67	2 00	7 57	4 22	2 34	1 88	2 48	1 94	1 71	1 42	5 13		2 07	
17. Plastering — interior		2 11	2 85	1 57	5 17	1 59		56	3 95	5 72	85	7 08	3 24	1 73	1 65	2 84	3 09	1 30	1 43	4 04		2 42	
18. Plumbing		1 42	1 85	1 23	3 68	1 23		71	2 10	2 91	95	3 32	2 18	1 41	1 14	2 01	95	1 15	90	2 24		1 99	
19. Pile driving other than wharf		4 68	5 60	7 13	7 82	8 73		7 69	18 85	15 90	4 00	13 71	11 09	7 40	8 79	13 57	5 62	2 90	5 31	11 67		11 36	
20. Roofing		7 36	7 60	6 49	Z	4 50		3 07	16 74	15 89	2 15	18 91	8 11	5 26	3 97	7 60	5 37	4 25	5 09	(J)		8 33	
21. Sheet metal erection		2 08	2 35	1 60	(X) 4 83	1 87		3 39	3 67	6 42	2 15	8 28	2 66	1 71	2 10	2 91	1 94	1 33	1 75	4 59		2 73	
22. Steel erection — general		9 46	(X) 10 20	6 80	18 29	11 71		3 54	14 68	(J)	5 00	36 29	14 86	6 76	7 00	10 51	(X) 7 74	5 82	5 95	12 98		8 91	
23. Steel erection — structural		13 21	(X) 16 70	10 84	21 96	11 71		3 54	22 08	35 39	5 00	45 82	22 06	9 58	8 33	11 79	(Z)	8 12	7 14	19 52		8 46	
24. Steel erection — interior ornamental		2 45	(J) (X)	1 89	4 51	2 21		1 75	4 99	5 94	3 25	8 83	4 00	2 02	2 38	4 02	1 73	1 84	1 75	4 57		3 58	
25. Steel erection — dwellings 2 stories or less		6 58	(X) 7 20	4 79	14 92	5 22		1 01	10 31	12 19	5 00	22 63	10 43	3 90	5 46	(Z)	5 72	3 87	4 17	9 53		5 58	
26. Steel sash and door		2 34	(X) 3 50	1 79	5 34	2 11		1 75	4 72	3 55	5 00	8 35	3 54	1 93	2 24	3 79	1 73	1 45	1 66	(J)		3 73	
27. Tile marble or stone setting interior		1 15	1 75	87	3 43	96		58	2 23	3 10	65	3 74	1 74	1 00	1 10	1 66	1 95	74	81	1 62		1 26	
28. Watchmen and timekeepers (H)		2 45	(J)	1 87	7 38	2 21		87	4 97	5 45	(F)	8 09	3 46	2 12	2 39	(Z)	2 29	1 56	1 84	4 69		3 94	
29. Waterproofing: Application by means of brush		2 85	(X) 5 30	2 07	8 17	1 82		3 07	4 10	6 67	(J)	7 57	4 22	2 34	1 88	2 48	1 94	1 71	1 42	5 13		2 07	
Application by means of trowel (Int.)		2 11	2 85	1 57	5 17	1 59		3 07	3 95	5 72	(J)	7 08	3 24	1 73	1 65	2 84	3 09	1 30	1 43	4 04		2 42	
Application by means of trowel (Ext.)		2 86	4 30	1 50	5 97	1 31		3 07	4 13	5 83	(J)	6 29	2 12	1 39	1 48	3 66	1 92	2 04	1 10	4 48		2 24	
Application by means of pressure gun		4 42	(X) 5 20	2 31	(X) 6 29	2 22		3 07	5 96	6 69	(J)	7 20	5 99	2 34	1 97	3 66	(X) 3 11	2 21	1 98	5 15		3 19	
30. Wrecking		14 17	(X) 21 30	10 95	Z	11 59		4 43	27 52	32 43	(J)	44 82	23 63	11 21	11 20	26 39	21 59	8 91	10 30	24 93		18 13	

Notes: (A) Special rates for government projects. (B) Includes erection of forms. (C) Includes blasting, but not caisson or coffer dam work. (D) Special rates for occupational disease. (E) Compensation must be insured in monopolistic State Fund. (F) Assign operation to Governing Classification. (G) Operations specified as hazardous by law must be insured in State Fund. (H) Not available if general contractor is conducting operations at job. (I) Painting of bridges and steel structures rated as steel erection. (J) Rate available only on application to Company. (K) Wrecking of structures based on Cubic Content. (L) State rate revision pending. (M) Ohio State Plan: Workmen's Compensation, The Industrial Commission of Ohio, Actuarial Section, Columbus, Ohio. (Z) Not available in this State. (X) Special Classification wordings. (Y) These now must give Performance bond or other security of $500, and $3,000 Indemnity in either cash, U. S. Treasury bonds or surety form. Wilful failure or negligence to give security subject to $500–$5,000 fine.

Eichleay . . . .

GOES EVERYWHERE

EICHLEAY SERVICE INCLUDES MOVING OF BUILDINGS FOR PLANT EXPANSION, STREET WIDENING, ETC.

SHORING • RIGGING • FOUNDATIONS • UNDERPINNING • INSTALLATION OF MACHINERY • STEEL ERECTION AND RELATED PROJECTS.

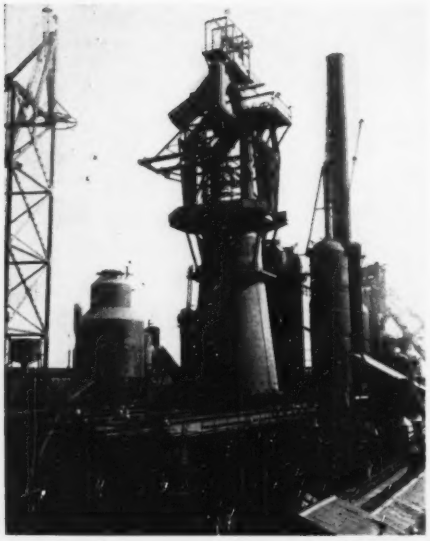
All work conforms to the best engineering practice and is performed with a minimum of interruption to normal operations.

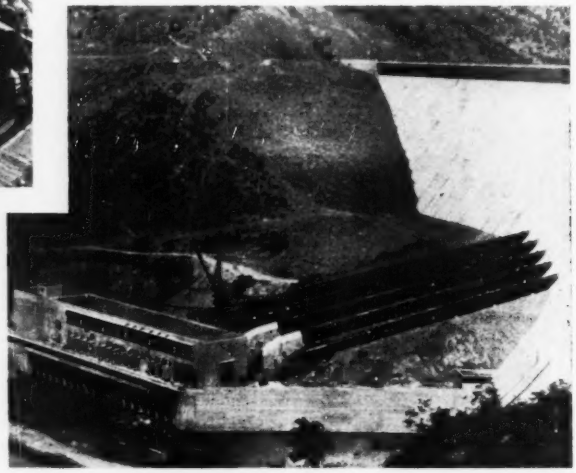
Inquiries invited

EICHLEAY CORPORATION

Established 1880

33 S. 19th Street, Pittsburgh 3, Pa.

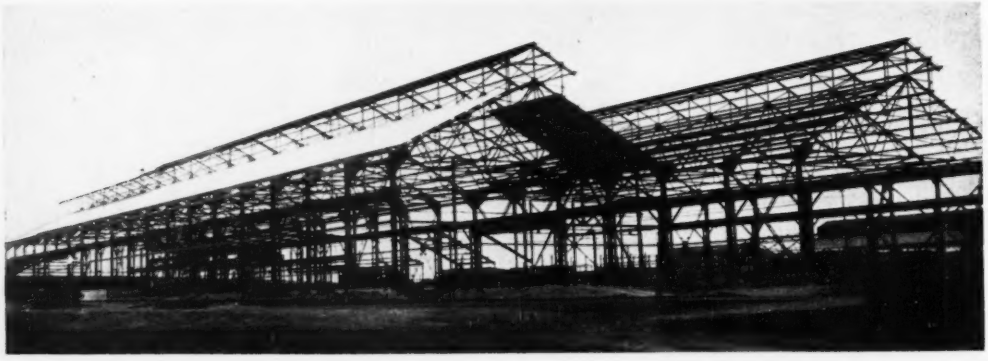


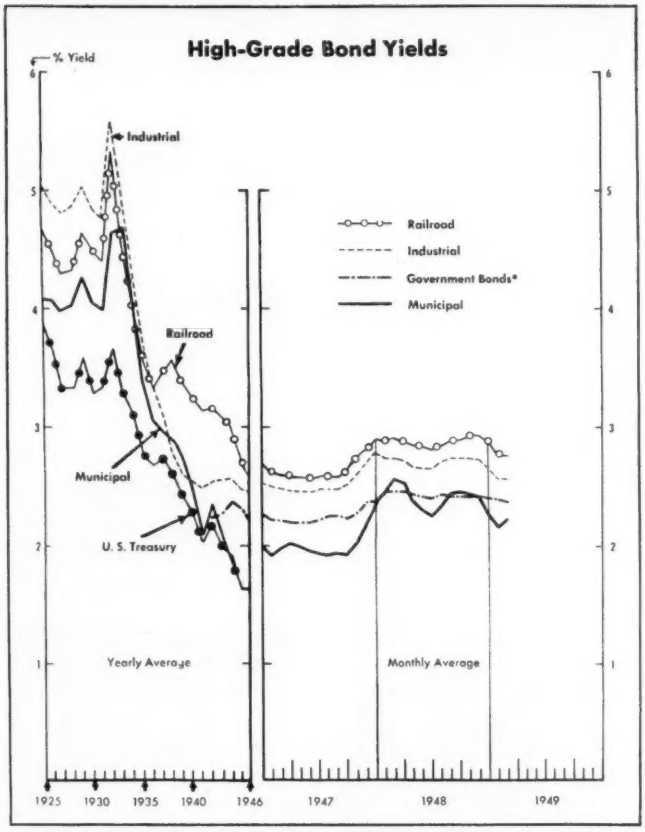


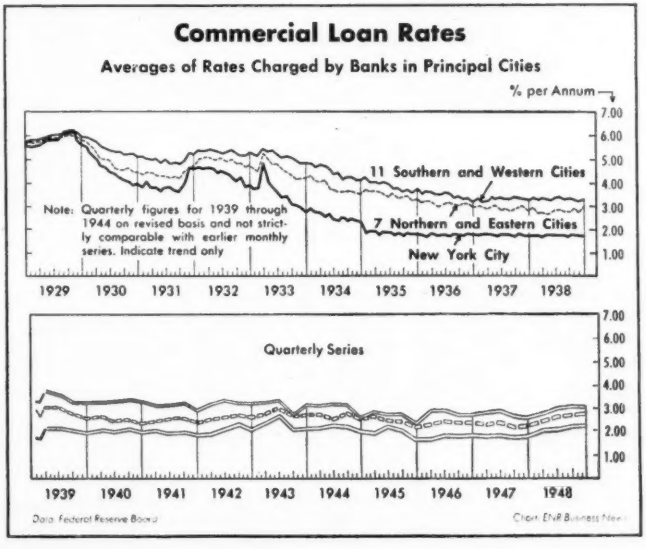
ABOVE—While a new Blast Furnace was being erected, the old furnace continued to produce pig iron. It was then dismantled and the new furnace was moved 112 ft. onto the old foundation.

RIGHT—Eichleay recently undertook the completion of the installation of penstocks at Shasta Dam, second largest dam in the world. Progress is shown in photo.

BELOW—Erection of Structural Steel to house new Morgan Rod Mill, also mechanical erection of equipment at plant of Colorado Fuel & Iron Co., Pueblo, Colorado.







Cost of Financing

More securities were sold in 1948 to finance new construction than ever before on record. They were sold at interest rates or yields close to prewar rates which were higher than those prevailing for war years through previous postwar years.

State and municipal bonds sold at yields averaging 2.40 percent, 19 percent higher than in 1947 and 46.5 percent above the 1946 record low.

High grade industrial bond yields averaged 2.70 percent, a 7 percent rise over 1947 and 10.5 percent above the 1946 record low.

Public utility bond yields in 1948 averaged 2.83 percent. This was 9 percent higher than the 1947 average and 13 percent above the 1946 low.

Yields of railroad bonds averaged 2.89 for 1948. This was 10 percent above the 1947 average and 11 percent higher than 1946 record low averages.

In January and February 1949, these average yields were consistently lower than the 1948 averages.

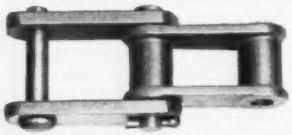
Bond Yields—Percent

	Govt.† (1)	U. S. Treas. (2)	Municipal (3)	Industrial (4)	Pub. Util. (5)	Railroad (6)
1933		3.31	4.71	4.98	4.69	4.55
1934		3.12	4.03	4.28	4.19	4.01
1935		2.79	3.41	3.73	3.59	3.58
1936		2.69	3.07	3.34	3.38	3.31
1937		2.74	3.10	3.16	3.22	3.45
1938		2.61	2.91	2.82	2.99	3.60
1939		2.41	2.76	2.64	2.83	3.39
1940		2.26	2.50	2.57	2.75	3.26
1941		2.05	2.10	2.50	2.69	3.16
1942	2.27	2.09	2.36	2.54	2.71	3.17
1943	2.29	1.98	2.06	2.55	2.63	3.10
1944	2.38	1.92	1.86	2.58	2.64	3.01
1945	2.34	1.66	1.67	2.50	2.59	2.75
1946	2.19	Disc	1.64	2.44	2.50	2.59
1947	2.24		2.01	2.52	2.59	2.62
1948	**2.43**		**2.40**	**2.70**	**2.83**	**2.89**
1948						
J	2.44		2.45	2.72	2.85	2.86
F	2.44		2.55	2.72	2.86	2.88
M	2.44		2.52	2.70	2.83	2.87
A	2.44		2.38	2.67	2.78	2.85
M	2.42		2.31	2.66	2.77	2.83
J	2.41		2.26	2.66	2.77	2.81
J	2.44		2.33	2.70	2.81	2.85
A	2.43		2.45	2.74	2.88	2.89
S	2.43		2.46	2.74	2.86	2.90
O	2.43		2.45	2.74	2.87	2.92
N	2.43		2.42	2.73	2.88	2.93
D	2.42		2.26	2.65	2.84	2.88
1949						
J	2.40		2.15	2.58	2.77	2.78
F	2.38		2.23	2.58	2.75	2.77

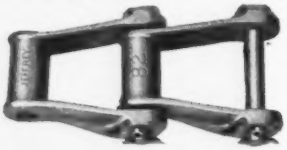
(1) †Standard Statistics & Poors—aver. long-term government bonds, taxable. To replace the long-term U. S. Treasury bonds series discontinued after December, 1945.
(2) Aver. yield of long-term U. S. Treasury bonds, partially tax exempt, not due or callable for fifteen years. Federal Reserve Bulletin.
(3) Standard Statistics & Poors—aver. 15 high-grade long-term municipals.
(4) Standard Statistics & Poors—aver. A1 plus industrials.
(5) Standard Statistics & Poors—aver. A1 plus public utilities.
(6) Standard Statistics & Poors—aver. A1 plus railroads.
(3) Standard Statistics & Poors—aver. 15 high-grade long-term municipals.
(4) Standard Statistics & Poors—aver. A1 plus industrials.

CHAINS, SPROCKETS and ATTACHMENTS

Detachable Link—Malleable Iron, SUPERMAL or PERDURO

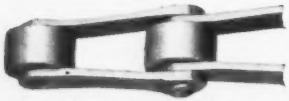


Combination—Malleable Iron or SUPERMAL Block Links and Steel side bars.



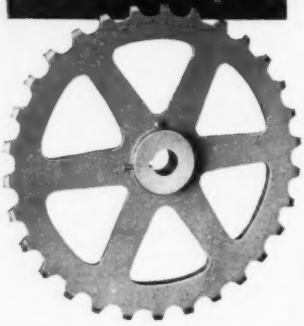
"H" Type Mill—Malleable Iron, SUPERMAL or PERDURO

"400" Class Pintle

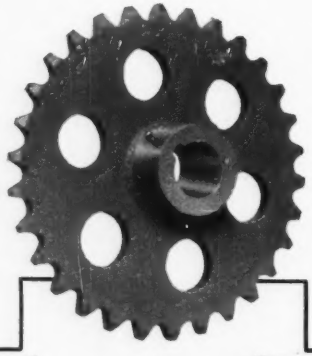


Malleable Roller—Malleable Iron, SUPERMAL or PERDURO

Steel Thimble Roller with straight or offset side bars

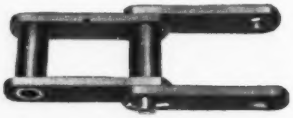


For every Elevating, Conveying and Driving need. Easy to select the right type and size from the broad Jeffrey line.



Long Pitch Steel Thimble Roller with plain or flanged rollers

"800" Class Steel Bushed



Steel Knuckle

Transfer

Steel Block in various types

"H" Type Refuse—Malleable Iron or SUPERMAL

A-1

F-2

H-2

K-2

A-42 with C-wing

G-6

S-1

THE JEFFREY MANUFACTURING COMPANY

Established 1877

923 North Fourth St., Columbus 16, Ohio

Complete Line of Material Handling, Processing and Mining Equipment

Baltimore 2	Chicago 1	Detroit 13	Jacksonville 2	Pittsburgh 22
Birmingham 3	Cincinnati 2	Harlan	Milwaukee 2	St. Louis 1
Boston 16	Cleveland 13	Houston 5	New York 7	Salt Lake City 1
Buffalo 2	Denver 2	Huntington 19	Philadelphia 3	Scranton 3

Depreciation Schedule— U. S. Bureau of Internal Revenue

Depreciation is no longer a word limited to the vocabulary of accountants. Engineers and contractors are concerned with it because as taxes increase and construction costs rise, the rate at which facilities can be charged off to depreciation reserves influences whether building will be undertaken and when.

Because depreciation allowances are so important, Congress is hearing more and more about them, and pressure is building up for liberalization of the government's policy.

Industry is generally making up the difference between reserves and costs of new plants and equipment from profits. And it is of course, paying taxes on those profits. This presents a serious problem because industry is faced with the problem of financing huge expansion and improvement programs. McGraw-Hill's survey of "Business' Needs for New Plant and Equipment", reported in *Engineering News-Record* January 20, shows that American industry has plans now for investing some $55 billion in new plants and equipment in the next five years.

This puts a squeeze on many companies. They are short of cash because their depreciation reserves are providing only perhaps 50 percent of the cost of replacement.

Industry leaders, such as Ben Moreell, chairman of the board and president, Jones & Laughlin Steel Corp., are seeking a change in tax policy to relieve the squeeze. They are asking that companies be allowed to depreciate new equipment at an accelerated rate. Mr. Moreell, for example, proposes that companies be allowed to write off up to one-half of equipment costs within one to five years, and that they should be allowed to deduct this rapid amortization from taxable income. To safeguard the Treasury, he suggests that companies be allowed to limit amortization in any one year to no more than half their taxable income before the amortization is deducted.

The decision to build or not to build is influenced by the length of time it will take for the new facilities to pay off. The survey of "Business' Needs for New Plants and Equipment" by McGraw-Hill, showed that four out of five manufacturing companies (80 percent) expect a new building to pay for itself in 15 years or less. More than 60 percent of them insist that new construction pay off in 10 years or less. Now the "probable useful life" of such new construction might be much longer.

The schedules herewith give the "probable useful life" of buildings and equipment in years. Depreciation rates are calculated from the years of useful life on a straight-line basis. If, for example, the probable life is 10 years, the equipment may be depreciated at the rate of 10 percent a year. If 25 years, the rate is 4 per cent.

In January 1942 the U. S. Bureau of Internal Revenue revised its 1931 schedule of probable useful life and depreciation rates. Items of direct interest to civil engineers are shown in revised Schedule "F", and include those quoted in the following list.

BUILDINGS

	Bldg Only	Bldg. & Equip.		
	Est. Tot. Life	Composite rate (percent) Type of construction		
	Years	Good	Average	Cheap
Apartments	50	2½	2½	3
Banks	67	2	2	2½
Dwellings	60	2	2½	3
Factories	50	2½	2½	3
Farm bldgs	60	2	2	2½
Garages	60	2	2½	3
Grain elvtrs.	75	1½	2	2½
Hotels	50	2½	2½	3
Loft bldgs	67	2	2	3
Mach. shops	60	2	2½	3
Office bldgs	67	2	2½	3
Stores	67	2	2	2½
Theaters	50	2½	3	3½
Warehouses	75	1½	2	2½

BUILDING EQUIPMENT

	Years
Air conditioning syst—	
Over 20 tons	20
5 to 15 tons	15
Under 5 tons	10
Air washer. (See Dehumidifier.)	
Compressors—	
Refrigerating	20
Air for pneu. controls	20
Condensers—	
Shell and tube	20
Double pipe	20
Evaporation	15
Coolers, water—tank & coil or shell & tube	20
Dehumidifier	10
Drums, purge or surge	20
Ducts and other sheet metal work.*	
Fans	15
Filters, air, oil, self-cleaning	20
Dry cleanable	10
Gauges	15
Grilles and registers—	
Anemostats	20
Grilles & registers—	
Wall type	20
Ceiling	20
Window units	15
Plaques	20
Santrols.*	
Heaters—boiler	
Oil burner & tank	20
Booster heaters	20
Electric heaters	15
Finned tube, steam †water cleanable tube	20
Prehtrs. and rehtrs.	20
Water heaters, open or closed type	20
Insulation—Cork, cold pipes & tanks	20
Magnesia, hot pipes	15
Wool felt	20
Asbestos	15
Louvres & screens, Copper	25

*Life of building.

	Years
Steel	15
Manometers	15
Motors—	
Synchr. & exciter set	20
Induc., indoor	20
Induc., weatherproof for outdoor	20
Piping, refrig & other	20
Pumps—	
Chilled water	20
Condenser water	20
Condensate	20
Dehumidifier	22
Evap. condenser	15
Sump	25
Well	25
Receivers, refrigerant	25
Regulators, suction or static pressure	5
Silicia gel beds	15
Spray pond	15
Switchbd, elec. panel	20
Thermometers, room type or recording	15
Tower, cooling	15
Valves—Relief	20
Automatic expansion and by-pass	5
Solenoid	15
Water regulating	20
Ammeters	15
Clocks	15
Clocks, watchman	15
Compressors, air & vacuum	20
Electric clock systems:	
Clocks, time	20
Conduits, fittings & wiring. (See light, sys.)	
Motors & gener	20
Switch equipment— Boxes.*	
Switch parts	20
Elevators:	
Freight	25
Passenger	20
Fire equipment:	
Fire alarm systems	25
Movable equipment	20
Sprinkler system.*	
Guards, machine	25
Heaters, electric	10

	Years
Heaters, gas	15
Heating systems:	
Boilers & furnaces	20
Burner equipment—	
Gas	16
Oil	10
Radiators	25
Lighting systems:	
Conduits and fittings.*	
Wiring	20
Fixtures	15
Miscellaneous facilities:	
Awnings	5
Doors, louvre, vent	15
Incinerators	14
Safes and vaults.*	
Screens, window	10
Shades	5
Venetian blinds	8
Plumbing:	
Faucets & flush valves	15
Bath tubs, lavatories, toilet bowls, etc	25
Pipes—	
Brass or copper.*	
Iron, cold-water	25
Iron, hot-water or steam	20
Sewer, Cl. or vitr.*	
Valves—	
Brass body, water or steam.*	
Iron body, water or steam	20
Pumps:	
Suct., pres. & sump	13
Roofs:	
Asbestos	25
Asphalt and tar (prepared)	15
Galvanized iron—	
Light or cold dipped	15
Heavy or hot dipped	20
Tar & grav. (5-ply)	20
Tarred felt	10
Copper, slate, tile, tin.*	
Starters, electric	20
Switchboards, elect	25
Tanks and vats, water:	
Metal	25
Wood	15
Telephone equipment:	
Conduits and fitting.*	
Wiring & fixtures	20

	Years
Tools, small, misc	5
Transformers	25
Trucks, conveyance (within building)	10
Trucks, lift	15
Voltmeters	15
Welfare equip.:	
Athletic	10
Cafeteria	10
Hospital & first aid	10
Police and fire	10
Wells & well pumps	25

WATER SUPPLY

	Years
Impounding dams	150
Springs and wells	100
Infilt. galleries & tunnels	100
Collection conduits and reservoirs	75
Mains, cast iron:	
4-inch and less	50
6-inch	65
8 to 10-inch	75
12-inch and over	100
Settling basins	50
Coagulating basins	50
Filters	50
Steam engines	30
Diesel type engines	25
Pumps	50
Stand pipes	50
Meters	30
Hydrants	50
General office equip	19
General shop equip	29
General store equip	20
Laboratory equip	10

BRIDGES

	Years
Conc. & steel or masonry, large	100
small	75
Steel, heavy	50
Steel, light	40

ELECTRIC UTILITIES

Steam Production

	Years
Struct. and imprvts	50
Boiler plant equip	28
Engines and engine driven generators	30
Turbo-generator units	30
Acces. elect. equip	28
Misc. pwr plant equip	28

Hydraulic Production

	Years
Struct. and imprvts	75
Reservoirs, dams and waterways	150
Waterwheels, turbines and generators	35
Acces. elect. equip	35
Misc. power plant equip	35
Roads, railroads and bridges	100

Transmission Plant

	Years
Struct. and imprvts	45
Station equipment	28
Towers and fixtures	50
Poles and fixtures	33
Overhead conductors and devices	50
Underground conduit	75
Underground conductors and devices	40
Roads and trails	60

Distribution Plant

	Years
Struct. and imprvts	45
Station equip	28
Storage battery equip	20
Poles, towers & fixt	35
Overhead conductors and devices	33
Underground conduit	60
Underground conductors and devices	40
Line transformers	28
Services	28
Meters	38
Instals. on customers' premises	25
Street lighting and signal systems	22

ARTIFICIAL GAS

Production Plant

	Years
Struct. and imprvts	50
Boiler plant equip	30
Other power equip	40
Benches and retorts	35
Coke ovens	35
Producer gas equip	33
Water gas gener. equip	33
Petroleum gas equip	33
Other gas gener equip	33
Coal, coke, and ash handling equipment	40
Gas reforming equip	33
Purification equip	33
Residual refin. equip	40
Other prod. equip	33

Distribution Plant

	Years
Struct. and imprvts	45
Mains	80
Cast iron pipe—	
4 in. and less	50
6 in	65
8 to 10 in	75
12 in. and over	100
Steel pipe—	
4 in. and less	30
5 to 7 in	40
8 in. and over	50
Wrought iron pipe—	
¼ in. to 1½ in	33
2 to 2½ in	40
3 to 6 in	50
8 to 10 in	75
12 in. and over	100
Pump. & regulat. equip	35
Services	40
Meters	35
Meter installations	40
House regulators	40
House regul. instal	40
Other property on customers' premises	33
Other distrib. sys. equip	35

How long would you keep a machine that costs you a day's production every 3 days?

However new and shiny its paint, any portable compressor rated at only 60, 105, 160, 210, 315 or 500 ft. is essentially a 1932 model, designed for the air tools used in 1932.

It delivers only enough air to maintain 70 lbs. pressure in a set of the big tools used today.

This is a costly deficiency because those same tools, at full 90 lbs. pressure, do 30% to 40% more work.

That's one extra day's production every 3 days. That's real money.

You get that full 90 lbs. pressure, and resulting increased production, with Jaeger "new standard" Air Plus Compressors.

Every Jaeger model is designed to deliver the correct, full amount of air needed to run today's tools at full pressure and maximum efficiency.

They are specifically engineered for these increased capacities, with much larger valves, port areas, intercoolers, air receivers and clutches, advanced-type force feed lubrication and balanced 2-stage compressor design. That's why they are able to compress, cool and deliver more air easily, economically, without building up heat, losing efficiency at altitudes or shortening engine or compressor life.

They operate at the conservative, economical speeds of today's gas and diesel engines — the same speeds used in other well-known compressors that deliver from 15% to 20% less air.

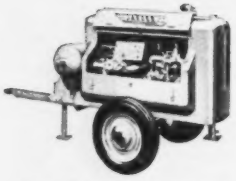
When you need less air, they slow down under "Fuel Miser" automatic, fully graduated control — match or beat the fuel economy of others. No penalty for extra capacity.

Is it good business for you to keep a 1932 model compressor on 1949 work—at a steady loss as great as one day's production for every three you work—plus a bigger loss later thru "old model" obsolescence?

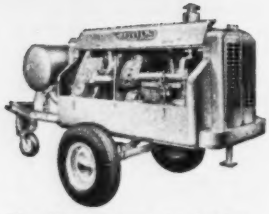
Ask any Jaeger user. Better yet, go to the nearest distributor who sells and rents "new standard" Air Plus compressors and let him prove this production increase—*on your job.*

THE JAEGER MACHINE CO.
Columbus 16, Ohio

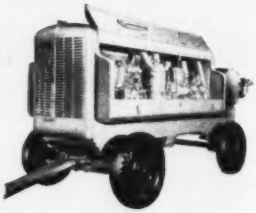
Full 90 lbs. pressure for all tools



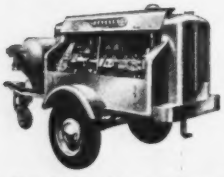
New 75 for a heavy breaker.



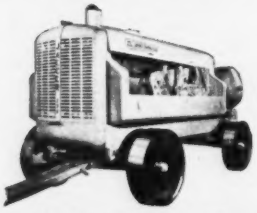
New 185 for 3 heavy duty breakers, 2 medium or 1 heavy rock drill.



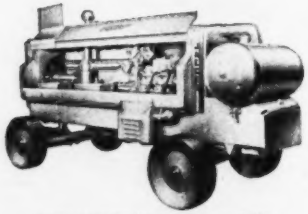
New 365 for 2 medium or 1 heavy wagon drill plus hand-held drill.



New 125 for 2 heavy or 3 medium breakers or heavy rock drill.



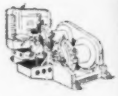
New 250 for medium wagon drill or an additional hand-held tool of any size.



New 600 for 2 heavy wagon drills plus a hand-held drill.

PUMPS

MIXERS



HOISTS

JAEGER
engineered equipment
COMPRESSORS • DIAGONAL SCREED FINISHERS
SCREW SPREADERS • BITUMINOUS PAVERS

Construction Equipment Depreciation Schedule

In January 1942 the U. S. Bureau of Internal Revenue revised its 1931 Schedule F of probable useful life and depreciation rates allowable for income tax purposes. Annual depreciation rates are computed on a straight-line basis. For example, on a probable useful life of ten years, annual depreciation is 10 percent; on 25-yr. life, annual depreciation is 4 percent. Probable useful life is shown below:

CONSTRUCTION EQUIPMENT	Years
Automobiles: Light	3
Medium 3; Heavy	5
Backfillers, power:	
Light 3; Medium	5
Heavy 6; Tractor	5
Barges:	
Steel 30; Wood	25
Batcher plants:	
All steel, demount	10
Steel frame, wood bin	10
Stationary	14
Wood frame and bin	7
Batch, meas. devices	4
Benders, bar	5
Bending blocks	10
Bending mach.: Angle	15
Pipe & Rail	10
Bins: Steel, concrete	6
Steel 12; Wood	8
Bin frames, steel	6
Blacksmith shop, port	4
Blocks, pulley, differential	6
Blowers, mechanical	10
Boilers: Upright	7
Locomotive	15
Stationary	20
Borers (wood), port	3
Boring apparatus, test	10
Boxes, mortar & batch	3
Brakes: Bending	10
Cornice (sheet metal)	22
Breakers, rev., pneu	3
Buckets: Cableway	6
Clamshell 6; Concrete	5
Elevator	5
Orange peel	6
Bail, pivot turnover	5
Scraper or drag line	6
Buggies: Concrete	3
Timber	3
Building, job office or storage. (Life of job)	
Bulldozers:	
Gradebuilders	8
Tractor	4
Burner equip., gas & oil	12
Cables, wire	4
Cableways, cable only	3
Cableway carriage	5
Camping equip	3
Capstans, electric	10
Cars: Ballast spreader	10
Batch box, steel	5
Boarding and tool	20
Concrete	8
Derrick, bridge	10
Dump, steel 8; wood	6
Flat, steel 12; wood	10
Hand, Hopper Scale	10
Skip hoist 10; Tank	20
Carts, concrete	3
Carts, tool (steel)	4
Cement gun machines	4
Chains:	
Hawsers and lines	6
Power, transmissions	5
Channelers, rock	6
Chipping and calking tools, pneumatic	3
Chutes, con., gravity	2
Clamps, column form	5
Clean mach. for exterior of bldg., steam or sand	15
Compressors:	
Belt driven	10
Electric, portable	8
Gasoline, portable	6
Motor-truck unit	5
Steam portable	6
Conc. mach., pneumatic	5
Concrete mixers: Elec.	5
Gasoline, 3's, 5s, 7s	3
Gasoline, 10s, 14s	4
Gasoline, 21s, 28s	5
Paving, gas, steam	8
Concrete mixers: (*cont'd*)	
Truck mounted	5
Controllers, motor	12
Conveyors:	
Belt, elevating—	
Portable	3
Stationary	6
Bucket	6
Cable—Drag	6
Monorail	15
Chain, portable	6
Portable 5; Scraper	6
Cranes:	
Pridge and cantilever	20
Crawler—Electric—	
2½, 5 tons	5
10, 15 tons	7
20 tons and over	9
Gas—2½, 5 tons	5
10, 15 tons	9
20 tons and over	12
Locomotive gas	7
Steam—2½, 5 tons	6
10, 15 tons	10
20 tons and over	12
Locomotive	10
Dragline	10
Universal (gas, 2½ to 5 ton), mounted on 10-ton truck	6
Craneways: Steel	15
Wood	10
Crushers, rock: Port	8
Stationary	10
Cutters: Bar, power	5
Corru. iron, hand	10
Derricks: Boat	10
Circle swing, hand	8
Crab—hand 16; power	10
Guy—Steel, 12; Wood	8
Stiff-leg—steel 12; wood	8
Diggers, clay, pneu	3
Drag lines:	
Electric—½, ¾ cu. yd.	6
1, 1¼, and 1½ cu. yd.	8
2 cu. yd. & over	10
Gasoline—½, ¾ cu. yd.	5
1, 1¼ & 1½ cu. yd.	9
2 cu. yd. and over	12
Steam—½, ¾ cu. yd.	6
1, 1¼ and 1½ cu. yd.	10
2 cu. yds. & over	12
Dredges: Clamshell	16
Dipper 8; Hydraulic	20
Pipe	10
Drill boats	12
Drill points, well	5
Drills: Airdrifter	3
Elec. or pneu., hand, for wood or metal	5
Hand, electric	3
Rock, electric	3
Jackhammer	3
Steam	5
Traction, well	7
Trinod	7
Tunnel carriage	5
Well	10
Drums for oil (steel)	10
Elevators:	
Bucket, stationary	6
Cage (steel tower)	5
Engines:	
Blowing 12; Fire	7
Gas 10; marine 20; oil	26
Plumbing 14; Steam	11
Excavators:	
Cableway, complete	4
Trench, gasoline—	
7-ft. and 12-ft. depth	6
18-ft. depth	8
7-ft. and 12-ft. depth	8
18-ft. depth	10
Trench, vert. boom	5
Wheel or ladder type	5
Extinguishers, fire	3
Fans, exhaust	15
Finishing machines	4
Floats, bridge (steel)	5
Forges, gas or oil	10
Forms:	
Conc. (metal pans)	5
Conc., supports, adj.	4
Steel, for—	
Pavements 4; Pipes	3
Roads 4; Walls	5
Tunnels & conduits	4
Furnaces, metal melting:	
Coal fired 10; Electric	12
Gas or oil	7
Generator sets:	
Steam engine	12
Turbine, headlight or floodlight	4
Gin poles (steel)	10
Graders: Blade, road—	
7, 8 foot blade	4
9, 10 foot blade	5
over 10-foot blade	8
Elevating	8
Form, subg. planers	6
Rooters, wheel	5
Grinders: Metal surface	15
Saw filers & setters	14
Surface, concrete	4
Hammers: Electric	3
Pneumatic riveting	3
Heaters, asphalt, tar, and pitch kettles	4
Helmets, gas and diving suits and equip.	10
Hoists: Chain	6
Air, electric, or steam	8
Elec. monorail or post	5
Gas 6; Hand power	8
Elec. 8; Steam	12
Holders on pneumatic	4
Hose: Fire, linen or rubber lined cotton	5
Metal, flexible	10
Oil 5; Reel or cart	10
Rubber, air, steam or water	10
Inundators, batch	4
Jacks: Hyd. 8; Rail	25
Rachet 8; Screw	5
Push and pull	3
Jibs, steam	17
Jointers, bench, electric, steam or gas	5
Ladders: Steel	3
Ladles, metal	7
Lathes: Metal working	15
Woodworking	17
Levee construction	
Drag lines	8
Shovels	8
Tower excavators	12
Life-saving equipment	10
Light plant	4
Lighters	22
Loaders, bucket:	
Crawler and Portable	5
Stationary	6
Locomotive battery	4
Locomotives, industrial:	
Diesel 10: Electric	16
Gas—Up to 10 tons	8
10 to 20 tons	15
Over 20 tons	20
Steam—	
Up to 10 tons	8
10 to 20 tons	18
Over 20 tons	20
Locomotives, std. gage	30
Magnets, lifting	15
Mixers: port. mortar	3
Less than ½ cu. yd.	6
Over ½ cu. yd	8
Cat-erpillar	8
Motors:	
AC and DC—Large	12
Medium 10; Small	8
Hydraulic 5; Pneu.	5
Mowers, right of way	5
Pile drivers: Railroad	10
Barge 8; Track	12
Steam, on skids	10
Pile hammers, steam or air: Heavy	10
Light 4; Medium	5
Pipe: Black or galv.	4
Wood	5
Wood & steel comb	6
Pipe lines & fittings, for floating dredges	10
Pit and quarry plants	6
Planers: Metalworking	15
Woodworking	20
Plows: Furrow 3; Rooter	6
Presses, drill	12
Pumping units:	
Electric—Centrifugal, Diaphragm, Piston, Gas—Centrifugal, Diaphragm	6
Hvy. contr's pump	4
Piston	5
Steam, centrifugal	10
Pumps: Air lift	10
Centrifugal, Humdinger, Impulse	6
Hydraulic 15; Oil	10
Pumps: Air lift (*cont'd*)	
Steam piston unit	6
Testing for pipe lines	15
Punches, hydraulic	20
Punches for steel, pwr.	15
Racks, storage, for pipe and steel:	
Steel 20; Wood	15
Rails, steel	10
Razing equip., for bldgs.	8
Reamers: Elec., Pneu.	3
Riveters, pneumatic	5
Rollers:	
Conc. finishing (steel)	10
Road, gas, steam	10
Rolls, ridge	5
Sand-blast outfits	10
Sawmills, portable	10
Saws: Band, cut-off and rip, power	10
Hand, Elec. & pneu.	3
Saws and woodworkers: Steel frames 10; Wood	5
Scales, large, track and wagon	20
Scarifiers: Attachments	4
Blocks, steerable	5
Drag, all steel	4
Grader type	4
Scrapers: Blade, carryall	6
Fresno or Morman	2
Rotary 4; Slip 2; Wheel	5
Screens and bunkers, for gravel pits only	5
Screens, revolving	6
Sharpeners, drill	8
Shears, for steel, hand	10
Shores, adjustable	4
Shovel attach	6
Shovels: Elec. or gas., crawler or wheel—	
½, ¾ cu. yd	5
1, 1¼, 1½ cu. yd	6
2 cu. yd. and over	8
Steam, craw. or wh—	
½, ¾ cu yd	7
1, 1¼, 1½ cu. yd	8
2 cu. yd. and over	10
Railroad, steam	10
Tunnel	4
Spouting plants, comp., concrete	4
Spraying equip., paint	12
Spreaders, stone:	
Hopper wagon	5
Steel box	5
Switches: Portable	4
Stationary	5
Tampers, backfill, pneumatic	3
Tamping machines	10
Tanks: Gasoline, storage and Relay	6
Water or air, storage (steel)	10
Water storage (wood)	14
Tarpaulins and tents	3
Thread. cut. mach., pipe	10
Tongs, chain	4
Towers: Cableway—	
Steel 6; Wood	3
Steel boom with counterweights	5
Tractors: Electric —	
3-ton 3; 5-ton 5; 10-ton 6; 20-ton	8
Gas or steam—	
3-ton 4; 5-ton 6; 10-ton 8; 20-ton	10
Trailers:	
Dump—Steel or Wood	10
Platform, wood	4
Drop plat., hvy. duty	5
Transformers, car	10
Trench. mach. (See Excav.)	
Trucks auto: General purpose or dump—	
¾-1 cu. yd	3
1-1½ cu. yd	5
2 cu. yd. & over	8
Tugs, screw-propelled, steam or gas	25
Vises	5
Wagons: Dump—	
Steel or Wood	6
Road oilers, tank, steel	10
Tank or sprinkler—	
Steel 10; Wood	8
Washers, gravel	3
Welders, acet. or elec	10
Wheelbarrows	2
Winches, elec. and pneu.	10
Wire and cables: Elec.	6
Flexible, steel armored	8

Construction Equipment Ownership Expense

Fixed expense per working month of owning construction equipment, expressed in percent of cost new, is available through the Associated General Contractors of America. The edition of this AGC Manual now in use is Contractors' Equipment Ownership Expense, Revised and Enlarged, 1938 with Supplement 1944.

This shows an "average annual expense" in "percent of capital investment *without* field repairs" and *without* fuel, lubricants and other operating expense. It includes no allowance for profit or ordinary on-the-job repairs. The selected prices shown as characteristic of the various types and sizes of equipment do not apply today, but the percentages to be charged off annually for Depreciation, Overhauling, Major Repairs, Painting, Interest, Taxes, Storage, Insurance, do apply now. Average use is shown in months per year. Thus the Expense per Working Month is obtained by dividing Average Annual Total Ownership Expense by the number of months worked.

Ownership Expense for two of eight size ranges of diesel crawler tractors, for example, is shown as:

Average Annual Expense Percent of Capital Investment Without Field Repairs	Drawbar hp. from 20 to 33 hp.	Drawbar hp. from 99 to 135 hp.
Depreciation	33%	25%
Overhauling, Major Repairs, Painting	20%	20%
Interest, Taxes, Storage, Insurance	11%	11%
Total Ownership Expense	64%	56%
Average Use, Months by Year	9 mo.	8 mo.
Expense per Working Month	7.1%	7%
Assumed Aver. Price	$2,500*	$8,100*
Expense per Working Month	$175*	$565*

* 1944 prices. A new manual computed on current prices is planned when prices stabilize possibly late in 1949.

Construction Equipment Rental Rates

Equipment rental rates vary greatly throughout the United States, depending upon local practices and conditions. A schedule of prevailing rental rates, representing as nearly as could be determined an over-all average of rental rates throughout the United States for specific prices of equipment has been compiled for informational purposes only by the Rental Committee Associated Equipment Distributors, Chicago, Ill. Selected items from the fourth edition prepared in 1947 were reported in ENR, May 27, 1948, page 161. A new schedule is now being worked out, but is not ready for publication as this goes to press. Rates are reported per month, per week, per day.

it's easier to

keep machines always in top "working trim"

with ALEMITE LUBRICATION EQUIPMENT

Modern Alemite Equipment is rugged and dependable, engineered specifically for heavy-duty service on all types of construction jobs under all temperature conditions. Assures safe, positive lubrication that makes construction equipment produce more profitably, last longer. Prevents waste and contamination of lubricants . . . saves you time, work, and money.

Illustrated here are but four models in the complete line of Alemite Lubrication Equipment for the construction industry. For full information on these, or any other equipment you need, write Alemite, 1821 Diversey Parkway, Chicago 14, Illinois.

Alemite "Rock Crusher" High Pressure Pump

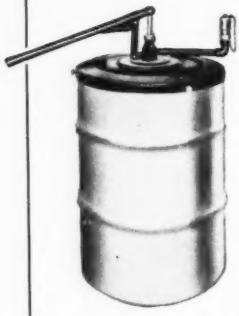
This husky air-operated pump makes light work of the hardest lubrication jobs. Handles a volume delivery of heavy fibrous lubricants even at low temperatures. Improved helix arm and worm gear feed assure positive priming of heaviest greases. Builds 5000-pounds grease pressure.

Alemite Barrel Pumps Powered by Rugged Air Motors

Built to handle the toughest lubrication jobs with ease. Pump lubricants directly from original drums at pressures up to 8000 lbs. Serve one or more outlets. Feature "Dynamic" Primer which adds positive mechanical priming, permitting easy handling of light, heavy and fibrous lubricants.

Alemite Air Operated Heavy-Duty Oil Pumps

Designed for fast, large-volume dispensing of oil or fluid gear lubricant right from original drum—without waste or contamination. Ideal for filling engine crank cases, transmissions and other large oil reservoirs. Fits directly into bunghole of 54-gallon drum.



Alemite Loader Pumps

For quick, easy filling of hand guns without waste or contamination. Prevent the air pockets which result from hand-and-paddle loading methods. Save $3\frac{3}{4}$ man hours for every 100 lbs. of grease used. Model shown here fills guns directly from original 100-lb. lubricant drums.

***FREE** – Interesting illustrated booklet, "Correct Lubrication in the Construction Industry." Packed with valuable facts on the lubrication needs of various machines, proper selection of lubricants, proper handling and application of lubricants. Send now for your free copy.*

STEWART WARNER

ALEMITE

REG U.S. PAT OFF

Modern Lubrication Methods That Cut Production Costs

Itemized Cost Analyses of Fresno Hospital

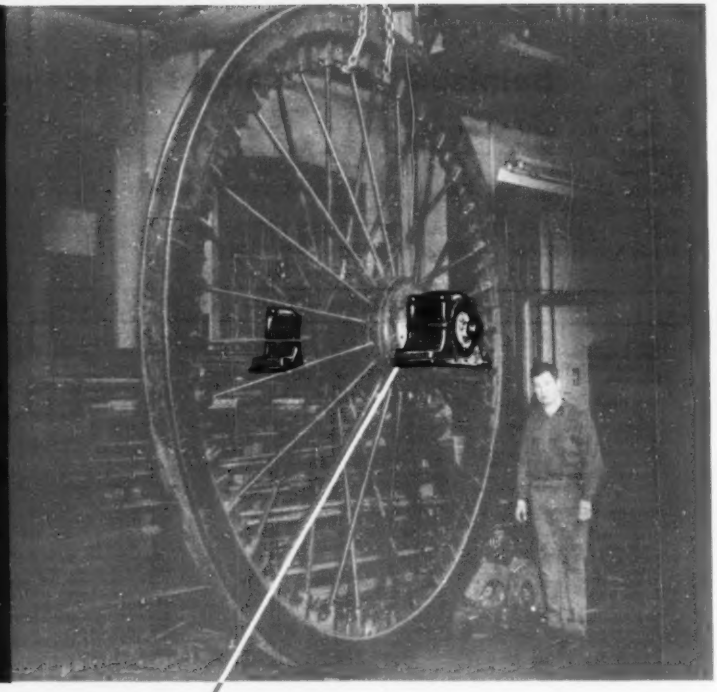
Unit prices set for payment purposes for the Veterans Administration, 250-bed, general medical hospital at Fresno, California offer one of the most complete analyses of building costs ever published. The main construction contract was let August 12, 1947. The unit prices here reported cover not only this contract but also materials and equipment furnished, overhead, engineering and contingencies.

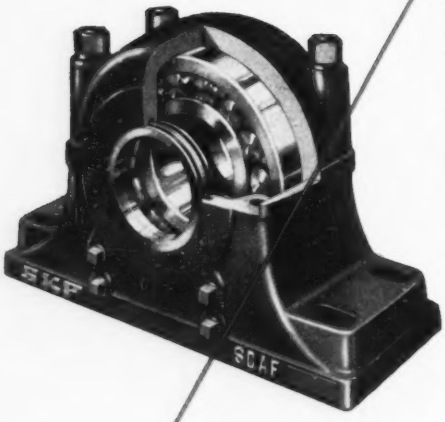
Design of the Fresno, VA hospital was described in detail in ENR, March 3, 1949, p. 58. Summarized here are those features that illuminate the unit prices.

Planning and construction of this hospital is under the supervision of the Sacramento district office, Corps of Engineers.

Item	Quantity	Unit Price	Total Cost
Land	By V. A.	.....	
Site Improvement	% constr. $	2.2%	$125,000
Outside Utilities	% constr. $	4.0%	230,737
Buildings	% constr. $	93.8%	(5,369,363)
	2,993,678 cf	$1.79	
Main Hospital Bldg.	% constr. $	83.6%	(4,785,363)
	2,636,394 cf	$1.82	
Foundation & substructure	% bldg. $	3.6%	173,505
Building enclosure	% bldg. $	40.5%	1,937,502
Interior finish	% bldg. $	25.4%	1,215,575
Plumbing, piping & fixtures	% bldg. $	4.6%	216,010
Heating & ventilating	% bldg. $	10.7%	510,200
Electrical wiring & fixtures	% bldg. $	6.8%	324,401
Elevators	% bldg. $	3.4%	164,450
Equipment (incl. installation)	% bldg. $	5.1%	243,630
Garage	91,200 cf	$0.58	53,000
Apartment House (A)	29,200 cf	$1.64	48,000
Apartment House (B)	29,200 cf	$1.64	48,000
Manager's Quarters	30,654 cf	$1.70	52,000
Nurses' Quarters	55,900 cf	$1.40	78,000
Attendants' Barracks	31,000 cf	$1.45	45,000
Boiler House	90,130 cf	$2.88	260,000
	% constr. $	100%	$5,725,100
Total Construction Cost	2,993,678 cf	$1.91	
Site Improvement	% constr. $	2.2%	($125,000)
General site grading	25,900 cy	$0.46	12,000
Landscaping	20 acre	4,600.00	92,000
Fencing (wood)	800 lf	2.50	2,000
Open walks & trails (mostly 6' wide)	8,333 lf	2.28	19,000
Outside Utilities	% constr. $	4.0%	(230,737)
Storm sew. (no piping, 1 catch basin)	lump sum	.....	200
Road excavation, fills & drainage	lump sum	.....	23,997
Road base course & surfacing	19,800 sy	2.17	42,440
Parking areas & hard standings	2,800 sy	2.00	5,600
Sew. collect. & disposal (0.075 MGD)	lump sum	.....	17,000
Water supply, storage & distribution	lump sum	.....	97,500
Water treatment plants	lump sum	.....	2,500
Power & light distb. (1800 KW, substation in 401.79)	lump sum	.....	22,000
Heating system, exterior (500 H. P.)	lump sum	.....	11,100
Fuel oil storage & distribution	gal.	0.21	6,400
Gasoline & Lub. oil storage & distb.	gal.	4.00	2,000
Buildings	% constr. $	93.8%	(5,369,363)
Main hospital building (250 bed)	% constr. $	83.6%	(4,785,363)
Foundation & substructure	% bldg. $	3.6%	(173,505)
Excavation (earth, incl. backfill)	39,000 cy	1.74	67,850
Footings & foundation walls	2,260 cy	46.16	104,325
Forms	49,500 sf	0.90	44,550
Concrete	2,260 cy	19.00	42,940
Reinforcing steel	91 ton	185.00	16,835
Waterproofing & dampproofing	14,200 sf	0.10	1,420
Building enclosure	% bldg.	40.5%	(1,937,502)
Structural steel framing	1,800 ton	209.00	(376,200)
Furnish & fabricate steel frame	1,800 ton	146.55	263,976
Erect steel frame	1,800 ton	62.35	112,224
Miscellaneous iron & steel	lump sum	.....	(102,460)
Sheet metal (general)	lump sum	.....	12,000
Iron & steel	33 ton	620.00	20,460
Ornamental iron & steel	70,000 lb	1.00	70,000
Reinforced concrete	10,100 cy	91.83	(927,450)
Forms	760,000 sf	80	608,000
Concrete	723,000 cf	0.75	204,750
Reinforcing steel	620 ton	185.00	114,700
Masonry walls and back-up	lump sum	.....	(296,580)
Facing (anchor & adhesion T. C.)	75,500 sf	3.75	283,200
Back-up (mortar)	15,000 cf	0.60	9,000
Treatment concrete surfaces for plaster	7,300 sy	0.60	4,380
Partition walls (hollow tile)	21,500 sf	0.55	11,825
Exterior doors	23 ea	435.00	10,005
Exterior windows & glass	1,106 ea	156.31	(172,880)
Windows	1,097 ea	110.00	120,670
Skylights	3 ea	500.00	1,500
Glass & glazing	29,600 sf	1.10	32,560
Automatic vents	6 ea	250.00	1,500
Detention screens	90 ea	185.00	16,650
Roofing	376 sq	47.64	17,912
Weather protection	25,000 lf	0.89	22,190
Interior finish	% bldg. $	25.4%	(1,215,575)
Finished walls and ceilings	86,000 sy	4.80	(413,300)
Furring	72,000 sy	2.00	144,000
Lathing	72,000 sy	1.65	118,800
Plastering	86,000 sy	1.75	150,500
Movable partitions	10,880 sf	4.20	45,670
Accoustical treatment & installation	76,125 sf	0.80	61,125
Interior doors & windows	882 ea	143.96	(126,975)
Hollow metal doors & frames	25 ea	395.00	9,875
Kalamein doors & frames	32 ea	200.00	6,400
Shades & blinds	3,600 sf	3.25	11,700
Wood doors & steel frames	825 ea	120.00	99,000
Interior stone, tile & terrazzo	lump sum	.....	(406,070)
Interior tile	142,600 sf	2.07	294,775
Terrazzo	32,300 sf	1.65	53,295
Structural glass	5,000 sf	4.00	20,000
Interior stone (marble)	lump sum	.....	38,000
Floor topping & covering	149,600 sf	0.36	53,240
Trim & built-in wood features	lump sum	.....	5,957
Painting (incl. exterior painting)	440,000 sf	0.13	56,981
Finish hardware	907 set	51.00	46,257
Plumbing, piping and fixtures	% bldg. $	4.5%	(216,010)
Water system	lump sum	.....	(122,350)
Piping	lump sum	.....	85,500
Fixtures & installations	670 ea	55.00	36,850
Sprinkler system	258 hd	62.64	16,160
Gas, air and other special systems	lump sum	.....	19,000
Hot water generator (2700 gal. cap.)	2 ea	3,000.00	6,000
Sewer system	lump sum	.....	52,500
Heating & ventilating	% bldg. $	10.7%	(510,200)
Steam system		.....	35,500
Air conditioning equip. (300 T. well, 300 T. mech.)	600 ton	74.50	(448,800)
Central air cond. (2 unit, 150 T. ea.)	300 ton	538.33	161,500
Duct work, including grilles	160,000 lb	0.94	150,000
Unit air conditioners, incl. controls	160 ea	856.25	137,000
Refrig. equip. & mach. (17 T. Cap.)	lump sum	.....	26,200
Electrical wiring & fixtures	% bldg. $	6.8%	(324,401)
Electric wiring—power & light	3,500 lf	1.71	5,985
Power switchboards	3 ea	20,000.00	40,000
Generator sets or other converters	1 ea	3,200.00	3,200
Electrical fixtures	6,406 ea	18.71	(119,868)
Light fixtures	2,686 ea	29.60	79,506
Outlets & switches	3,720 ea	10.85	40,362
Telephone system	lump sum	.....	4,348
Annunciator system (nurses' call)	216 inst	53.24	11,500
Electrical paging or calling sys.	lump sum	.....	14,800
Misc. sys.–fire alarm, clock, radio	lump sum	.....	38,700
Sub-station (500–1800 KW)	lump sum	.....	85,000
Elevators	% bldg. $	3.4%	(164,450)
Passenger elevators (16 stops)	2 ea	35,000.00	70,000
Freight (9 stops)	1 ea	55,000.00	55,000
Dumbwaiters (24 stops)	3 ea	10,150.00	30,450
Casket lift (2 stops)	1 ea	9,000.00	9,000
Equipment (incl. installation)	% bldg. $	5.1%	(243,630)
X-Ray	lump sum	.....	19,764
Oper. exam. & treat. room equip.	250 bed	18.00	4,500
Dental equipment	250 bed	15.00	3,730
Laboratory equipment	250 bed	80.00	20,000
Sterilizers	16 ea	1,250.00	20,000
Furniture	250 bed	265.00	66,250
Kitchen & bakery equipment	250 bed	270.00	67,500
Other equipment	lump sum	.....	41,866
Garage	91,200 cf	0.58	53,000
Apartment House (A)	29,200 cf	1.64	48,000
Apartment House (B)	29,200 cf	1.64	48,000
Manager's Quarters	30,654 cf	1.70	52,000
Nurses' Quarters	55,900 cf	1.40	78,000
Attendants' Barracks	31,000 cf	1.45	45,000
Boiler House	90,130 cf	2.88	(260,000)
Foundation & substructure	% bldg. $	3.8%	9,917
Building enclosure	% bldg. $	22.4%	58,082
Interior finish	% bldg. $	1.1%	2,914
Plumbing, piping & fixtures	% bldg. $	4.6%	12,005
Heating & ventilating	% bldg. $	62.9%	(163,500)
Steam system	lump sum	.....	(163,500)
Piping	lump sum	.....	19,000
Pipe covering	lump sum	.....	6,400
Boilers & accessories (165.4 H. P. ea.)	3 ea	46,000.00	138,000
Electrical wiring & fixtures	% bldg. $	5.2%	13,582
Total Construction Cost	% constr. $	100%	$5,725,100
Materials & Equipment Furnished Mat. & Equip. Furn. Contr., Charged to Project Funds, Distr. to Features—Cr.	% constr. $	1.4%	80,000
	lump sum	.....	(−80,000)
X-ray equipment (contr. acct. 401.91)	lump sum	.....	−18,739
Dental equipment (contr. acct. 401.93)	lump sum	.....	−3,000
Kitchen & bakery (contr. acct. 401.97)	lump sum	.....	−25,000
Other equip. (laundry) (contr. Acct. 401.98)	lump sum	.....	−33,261
Overhead, Eng'r. & Inspection	% constr. $	8.9%	(512,078)
Architect-Engineer Contracts	% constr. $	3.3%	(190,922)
A-E- Title I work	% constr. $	3.2%	185,197
A-E title II work	% constr. $	0.1%	5,725
Preliminary Engineering	% constr. $	1.0%	56,740
General Engineering	% constr. $	0.1%	5,725
Inspection & Supervision	% constr. $	1.0%	56,638
Surveys—Construction	% constr. $	0.1%	7,425
Field Overhead	% constr. $	0.1%	5,700
District & Division Overhead	% constr. $	3.3%	188,928
Contingencies Reserve	% constr. $	3.7%	(214,530)
Construction	lump sum	.....	204,900
Supervision & engineering	lump sum	.....	9,630
Total Project Cost	**250 bed**	**$25,806**	**$6,451,708**
Total Unit Cost	**2,993,678 cf**	**$2.15**	

Holmes 12-foot sheave wheel and SKF Pillow Blocks . . . teamed for efficient operation





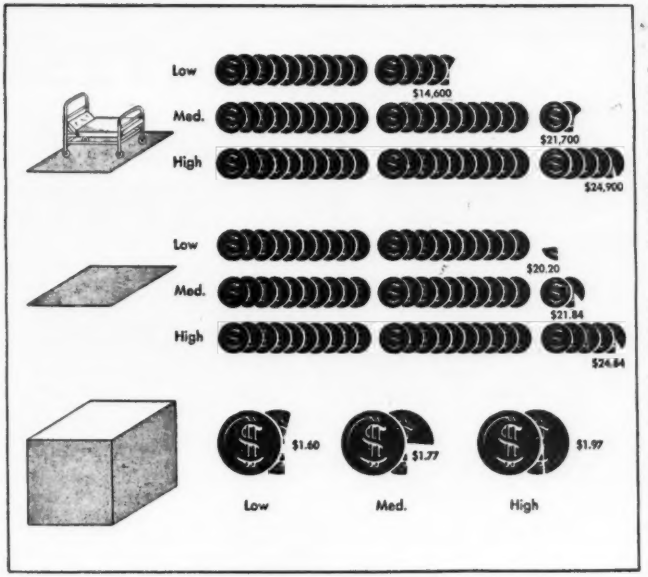
A sheave wheel takes a lot of punishment, and mine operation depends on its smooth-running efficiency. That's why Robert Holmes & Bros. specified SKF SDAF Pillow Blocks . . . on the five 12-foot diameter, bicycle type, sheave wheel assemblies furnished for Peabody Coal Company's new mine at Pana, Illinois.

Here are features of SKF Pillow Blocks . . . widely used in mines, mills and factories. Check this list:

- **Rugged—stands up under heavy usage**
- **Easy to Install and Service—a few simple steps**
- **Minimum Maintenance—equipped with SKF's exclusive Triple-Seal rings to keep lubricant *in* . . . dust and water *out*!**
- **Versatile—there's a pillow block for every job!**

Complete engineering service is available. Write us. SKF Industries, Inc., Philadelphia 32, Pa. 6616

PILLOW BLOCKS ENGINEERED BY SKF



Unit Costs of Veterans Hospitals

Costs of 29 Veterans Administration general medical hospitals, put under contract from September, 1946 to October, 1948 show a consistency and pattern of great value in refining the use of "per bed," "per sq. ft." or "per cu. ft." costs for quick, rough, preliminary cost estimating.

Each of these three types of unit costs computation is influenced, of course, by individual design, which could not be analyzed in detail for the present study. These design factors would include: Whether long narrow wings or square floor plans are used; whether open wards or enclosed private or semi-private rooms are provided; the ratio of service facilities, visitors reception rooms, Red Cross offices, laboratories, to the space actually occupied by beds.

Cost per bed to build VA hospitals is considerably higher than for civilian hospital construction because of the numerous extra facilities VA must provide. These include main hospital building, laundry building, boiler house, utility maintenance shops, station garage, manager's residence, staff quarters (four-family apartment or two duplex), nurses' quarters, outside services (utility lines, sewage, etc.), ground development (roads, walks, landscaping). The main hospital building includes: Outpatient medical and dental treatment rooms and clinics, laboratories, veteran and service organizations' rooms, administrative space, patients' dining hall large enough to accommodate approximately 60 percent of the patient population, staff dining hall, attendants' dining hall, oversized kitchen that must also provide space for at least 30 days' food supply, an assembly room or auditorium to accommodate from 50 to 60 percent of the patient population, chapel, canteen and recreation rooms. Typical nursing unit 40 beds.

This study shows, that:

1. In general, all unit costs are lower in the larger hospitals and get higher as the number of beds decreases.

2. The spread between high and low unit costs for different hospitals is less in the larger projects and greater where the beds are fewer.

3. The spread between high and low is greatest for the per bed costs and least, for the most part, in cube costs, though exceptions to the latter are marked and numerous.

Normal VA general medical hospital contract costs range from $15,000 per bed to $25,000 (at August, 1947 price levels. Increase by 11 percent to allow for February, 1949 prices). This price span eliminates one very high cost of $39,821 per bed for a 100 bed hospital that had pile foundations included in its costs but not included in other hospital costs. Also eliminated is one very low per bed cost of $14,233, awarded in September 1946, with a low of 694 sq. ft. of gross floor area per bed.

Costs per sq. ft. range from $20.00 to $25.00 (also at Aug. 1947 price levels). Here a high extreme of $26.21 is discarded for the reasons given above. The same hospital that had an extreme low per bed cost showed a sq. ft. cost of $20.20, not an extreme.

Costs per cu. ft. ranged from $1.60 to $1.97 at Aug. 1947 price levels. Here, too, an extreme high of $2.02 has been discarded because pile foundations costs were included and could not be eliminated. An extreme low of $1.41 has also been eliminated. This belongs to the same hospital that

Table I. Hospital Costs Compared by Size Groups

(August, 1947 price level used, ENR Building Cost Index 318. To modify for changes in materials prices and wage rate divide by 318 and multiply by ENR Building Cost Index value (Base 1913 = 100) for month for which cost values are wanted To adjust to Feb. 1949, for example, divide by 318, multiply by 353)

Size Group No. of Beds	No. of Hospitals in each Group	Cost per Bed High	Cost per Bed Med.	Cost per Bed Low	Sq. Ft. per Bed Highest Cost Bed	Sq. Ft. per Bed Lowest Cost Bed	Cost per Sq. Ft. High	Cost per Sq. Ft. Med.	Cost per Sq. Ft. Low	Cost per Cu. Ft. High	Cost per Cu. Ft. Med.	Cost per Cu. Ft. Low
A** 910–1003	4	$16,712	$15,664	$14,681	783	735	$21.51	$20.84	$19.93	$1.77	$1.625	$1.60
B 300–500	8	22,486*	19,045	14,233	910	694	24.71*	21.55	20.20	2.02*	1.725	1.41
B# 300–500	6	21,140	19,045	15,490	968	736	23.94	21.50	20.71	1.90	1.725	1.63
C 200–258	13	24,851	22,781	19,262	1,171	1,033	24.84	22.99	20.20	1.94	1.78	1.68
D 100	4	39,821*	23,636	22,429	1,518	1,072	26.21*	28.54	21.42	1.97*	1.815	1.70
D# 100–162	3	24,095	22,778	22,429	972	1,072	24.80	22.29	21.42	1.85	1.78	1.70

* Pile Foundations.
** All four hospitals in A group had separate foundation contracts which have been excluded from these figures.
# Excluding 3 hospitals: Miles City, Mont. (Group D) and Wilkes Barre (Group B) (Pile foundation included in both and unit costs at extreme high) also Providence, R. I., first contract let and unit prices at extreme low. (Group B).

Cost data used herewith is amount of contract award, it does not include construction contingencies, change orders, site costs, technical services and centrally procured equipment.

Table II. Spread in Unit Costs Reported—By Size of Hospital

Beds	No. of Hospitals	Percent High Unit is Cost per bed	Cost per sq. ft.	Cost per cu. ft.
A 910–1005	4	14%	8%	10%
B 300–500	8	58%	22%	43%
B# 300–500	(6)	(36%)	(19%)	(7%)
C 250–255	13	30%	23%	18%
D 100–146	4	78%	22%	16%
D# 151–162	(3)	(7%)	(15%)	(9%)
All Groups	29	180%	31%	43%
All # Groups	(26)	(70%)	(24%)	(23%)

Discarding 3 extremes, 2 high, 1 low.

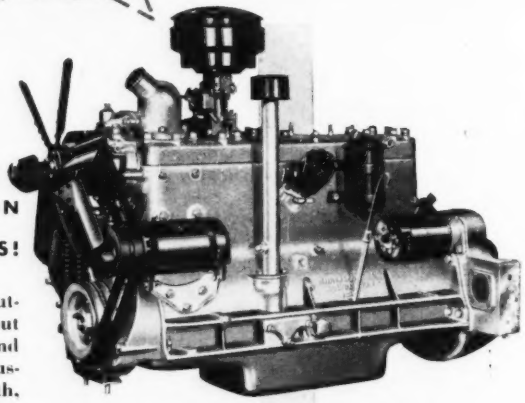
FOR A BETTER DAY'S WORK

in forests–

IN INDUSTRY—IN OIL FIELDS—ON FARMS—AND ON THE HIGHWAYS!

● The logging industry delivers record cuttings year after year . . . tremendous output figures made possible by careful planning and efficient, dependable power. Chrysler Industrial Engines and Power Units provide smooth, economical horsepower for sawmills, generators, air compressors, industrial mobile units, cranes and other logging equipment. For information about the full Chrysler Industrial line and its applications in all fields, write . . .

INDUSTRIAL ENGINE DIVISION, CHRYSLER CORP.
12200 E. JEFFERSON, DETROIT 31, MICHIGAN



MODEL INDUSTRIAL **14**
SIX CYLINDER

Bore 3¾". Stroke 5". 331.4 cubic inches displacement. Engine assembly equipped with truck type clutch housing, 20" suction type fan, hot type oil bath carburetor air cleaner, carburetor with built-in velocity type governor, oil filter with removable type cartridge, and 6-volt electrical equipment. Generally used in powering snow shovels, industrial mobile units, sawmills and air compressors.

CHRYSLER

INDUSTRIAL ENGINES AND POWER UNITS

HORSEPOWER WITH A PEDIGREE

MODELS AVAILABLE WITH *gyrol* FLUID COUPLINGS

has the extreme low cost per bed but a "normal" cost per sq. ft.

One hospital—Newark—has, in its own size group (910-1,005 beds), the highest cost per bed and the lowest cost per cu. ft.

In the medium large group (discarding the same extreme low as above) Denver, Colo.—with caisson foundations included in costs—has the lowest cost per bed, (494 beds); Seattle, Wash., (300 beds) has the lowest cost per sq. ft. and Shreveport, La., (452 beds) the lowest cost per cu. ft.

Thus these per bed, per sq. ft. and per cu. ft. costs are seen to be far from precision construction cost estimating tools. They are useful in providing working approximations and testing design and construction performance. Their limits of probable accuracy are defined and refined in the accompanying tables.

Through the combined efforts of the Veterans Administration and the Corps of Engineers, this VA hospital building program really got rolling in August 1947, with the Fort Hamilton, N. Y. and Fresno, Calif. hospital contracts, the former with 981 beds, the latter with 250. (Detailed reports on unit prices used for monthly progress payments to the contractor are available for both Fort Hamilton and Fresno, the former in ENR May 27, 1948, p. 91, the latter in this issue of ENR.) Three contracts preceded these for 399 beds, 162 and 152 beds. The remaining 24 contracts were let in the following 12 months during which there was a 12 percent increase in basic labor and material costs.

To compare unit costs on contracts let during this cost rise, all had to be adjusted to a common price base. So Fort Hamilton and Fresno costs were averaged to establish such a base and the ENR Building Cost Index for the same month was used as the measure of changes in materials prices and construction wage rates. Its value for August, 1947 is 318. Values for other months were divided by this amount to get the factor used for adjusting the unit prices of the other 27 hospitals to the Fort Hamilton-Fresno base.

No geographical pattern of costs can be detected but the general pattern is clear: unit costs come down as the size of hospital increases. The following grouping of cube costs illustrates both these conclusions:

Extreme low cube cost is $1.41 in Rhode Island (Sept. 1946 contract).

Extreme high cube is $2.02 in Pennsylvania (pile foundations incl).

Cu. ft. Costs from $1.60–$1.69

3 large hospitals, in N. Y. & N. J.
2 medium large, La. & Del.
1 medium small, Mo.

Cu. ft. Costs from $1.70–$1.79

1 large hospital, in N. Y.
2 medium large, Wash. & Calif.
6 medium small, Calif., Tex., W. Va., Nebr., Wash., Mich.
2 small, N. H. & N. Dak.

Cu. ft. Costs from $1.80–$1.89

1 medium large hospital, Nebr.
4 medium small, Pa., Ind., Pa., Tex.
1 small, Colo.

Cu. ft. Costs from $1.90-$1.97

1 medium large hospital, in Ark.
2 medium small, Mich. & W. Va.
1 small, Mont.

Half of the unit prices contracted for on these hospitals were lower than

Table III. Contract Prices Analyzed for Individual Hospitals

GROUP A 910-1005 Beds (Foundation Contracts Excluded)	No. of Beds	Contr. Date	ENR Cost Index	Cost per Bed: Sq. Ft. per Bed	Cost per Bed: Contr.	Cost per Bed: 8-47 Base	Cost/Sq. Ft.: Contr.	Cost/Sq. Ft.: 8-47 Base	Cost/Cu. Ft.: Contr.	Cost/Cu. Ft.: 8-47 Base
Fort Hamilton, N. Y.	981	8/47	100	737	16,313	16,313	21.51	21.51	1.76	177
Buffalo, N. Y.	1,005	12/47	105	727	15,766	15,015	21.60	20.57	1.72	164
Albany, N. Y.	1,005	3/48	105	735	15,415	14,681	20.93	19.93	1.69	161
Newark, N. J.	910	4/48	105	783	17,548	16,712	22.18	21.12	1.68	160
Foundations only										
Fort Hamilton, (Pile)	....	8/47	....	....	$435	....	0.57	....	.05	....
Buffalo, N. Y. (Caisson)	....	12/47	....	....	442	....	0.60	....	.05	....
Albany, N. Y. (Steel H Pile)	....	3/48	....	....	838	....	1.14	....	.09	....
Newark, N. J. (Pile)	....	4/48	....	....	742	....	0.95	....	.07	....

Fort Hamilton: Highest cost per sq. ft., Highest cost per cu. ft.

Newark: Highest cost per bed (783 sq. ft./bed), Lowest cost per cu. ft.

Albany: Lowest cost per bed (735 sq. ft./bed), Lowest cost per sq. ft.

GROUP B 300–500 Beds

Hospital Location	Size Beds	Contr. Date	ENR Cost Index	Cost/Bed: Contr.	Cost/Bed: 8-47 Base	Cost/Sq. Ft.: Contr.	Cost/Sq. Ft.: 8-47 Base	Cost/Cu. Ft.: Contr.	Cost/Cu. Ft.: 8-47 Base
Omaha, Nebr.	500	2/48	105	19,637	18,702	25.14	23.94	1.97	1.88
Little Rock, Ark.	500	2/48	105	20,270	19,305	24.81	23.63	2.00	1.90
Denver, Colo.**	494	9/48	112	17,349	15,490	23.65	21.12	1.95	1.74
Wilkes Barre, Pa.*	470	3/48	105	23,610	22,486*	25.95	24.71	2.12	2.02*
Shreveport, La.	452	11/47	103	21,560	20,932	21.81	21.17	1.68	1.63
Providence, R. I.	399	9/46	86	12,060	14,233	17.37	20.20	1.21	1.41
Wilmington, Del.*	322	2/48	105	22,197	21,140	22.93	21.84	1.73	1.65
Seattle, Wash.	300	10/48	112	21,039	18,785	23.20	20.71	1.92	1.71

* Pile Foundation.
** Caisson Foundation.

Wilkes Barre, Pa. (Pile Foundations Included): Highest Cost per Bed (910 sq. ft./bed). Highest Cost per sq. ft. Highest Cost per Bed cu. ft.

Providence, R. I. (Awarded Sept., 1946): Lowest Cost per Bed (694 sq. ft./bed). Lowest Cost per cu. ft.

Denver Colo. (Caisson Foundations): Next to Lowest Cost per Bed (736 sq. ft./bed).

Seattle, Wash.: Next to Lowest Cost per sq. ft.

Shreveport, La.: Next to Lowest Cost per cu. ft.

GROUP C 200–255 Beds

Hospital Location	Size Beds	Date Contr.	ENR Cost Index	Cost/Bed: Contr.	Cost/Bed: 8-47 Base	Cost/Sq. Ft.: Contr.	Cost/Sq. Ft.: 8-47 Base	Cost/Cu. Ft.: Contr.	Cost/Cu. Ft.: 8-47 Base
Iron Mountain, Mich.	255	2/48	105	22,734	21,651	24.38	23.22	2.02	1.92
Fresno, Calif.	250	8/47	100	22,580	22,580	21.86	21.86	1.78	1.78
Big Spring, Tex.	246	1/48	105	22,938	21,846	22.37	21.30	1.79	1.70
Erie, Pa.	208	4/48	105	24,799	23,618	26.08	24.84	1.98	1.89
Beckley, W. Va.	203	2/48	105	25,304	24,099	25.08	23.89	2.04	1.94
Clarksburg, W. Va.	203	3/48	105	25,144	23,946	24.14	22.99	1.85	1.76
Grand Island, Nebr.	201	12/47	105	26,094	24,851	22.28	21.22	1.80	1.71
Poplar Bluff, Mo.	201	12/47	105	25,271	24,068	21.39	20.37	1.77	1.68
Fort Wayne, Ind.	200	2/48	105	23,920	22,781	25.21	24.01	1.98	1.89
Altoona, Pa.	200	3/48	105	25,920	24,686	25.17	23.97	1.97	1.88
Spokane, Wash.	200	3/48	105	20,225	19,262	21.21	20.20	1.81	1.72
Saginaw, Mich.	200	4/48	105	22,589	21,513	22.93	21.84	1.81	1.72
Marlin, Tex.	200	6/48	106.6	23,649	22,101	24.74	23.12	2.09	1.88

Grand Island, Nebr.: Highest Cost per Bed (1171 sq. ft./bed).
Erie, Pa.: Highest Cost per sq. ft.
Beckley, W. Va.: Highest Cost per cu. ft.

Spokane, Wash.: Lowest Cost per Bed (954 sq. ft./bed).
Spokane, Wash.: Lowest Cost per sq. ft.
Poplar Bluff, Mo.: Lowest Cost per cu. ft.

GROUP D 100–162 Beds

Hospital Location	Size Beds	Date Contr.	ENR Cost Index	Contr.	8-47 Base	Contr.	8-47 Base	Contr.	8-47 Base
Minot, N. Dak.	162	6/47	97	21,765	22,429	21.62	22.29	1.65	1.70
Grand Junction, Colo.*	152	1/47	93	22,408	24,095	23.06	24.80	1.72	1.85
Manchester, N. H.	151	6/48	106.6	24,281	22,778	22.83	21.42	1.90	1.78
Miles City, Mont.*	100	9/48	112	44,599	39,821*	29.35	26.21	2.21	1.97

* Pile Foundation.

JOB DATA

Engineers: Black & Decker engineering staff.
Contractor: Warren-Ehret Co., Baltimore, Md.
Type of deck: Precast gypsum.
Type of roof: 4-ply pitch and slag.
Insulation: Fiberglas, $1\frac{3}{16}$" thick.
Area: 572 squares.
Slope: $\frac{1}{8}$" per foot.

BLACK and DECKER had 5 Good Reasons for Choosing FIBERGLAS* Roof Insulation

When the Black & Decker Manufacturing Co. reroofed the main building of "The World's Largest Maker of Portable Tools" at Towson, Md., they wanted these important advantages of Fiberglas Roof Insulation:

1. HIGH THERMAL EFFICIENCY. In the $1\frac{3}{16}$" thickness used on this job, the thermal conductance of Fiberglas Roof Insulation is only .33 (at 75° F. mean temperature). Efficiency of Fiberglas Insulation permits use of minimum thickness for any desired degree of protection.

2. IMMUNITY TO MOISTURE. This long-life insulation will not rot. Its core material is made of ageless glass fibers. (In an accelerated wet and dry, hot and cold-cycle weathering test by an independent laboratory, Fiberglas Board, after the equivalent of 75 years of such weathering, retained the characteristics of a satisfactory insulation.)

3. DIMENSIONAL STABILITY. Fiberglas Insulation will not swell, shrink, warp or buckle. This combination of desirable characteristics provides a firm, dependable base for a built-up roof.

4. LIGHT WEIGHT. In the thickness used on this job, Fiberglas Insulation weighs only 1.15 lb./sq. ft.

5. COMPETITIVE PRICE. Fiberglas Insulation is competitive in price with most ordinary roof insulations, costs no more to apply.

Only Fiberglas Roof Insulation meets all these requirements.

FOR YOUR INSULATED ROOFS, be sure to specify Fiberglas Roof Insulation. Applied by leading roofing contractors, coast to coast. Owens-Corning Fiberglas Corporation, Dept. 952, Toledo 1, Ohio. In Canada: Fiberglas Canada Ltd., Toronto, Ont.

*FIBERGLAS is the trademark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for a variety of products made of or with glass fibers.

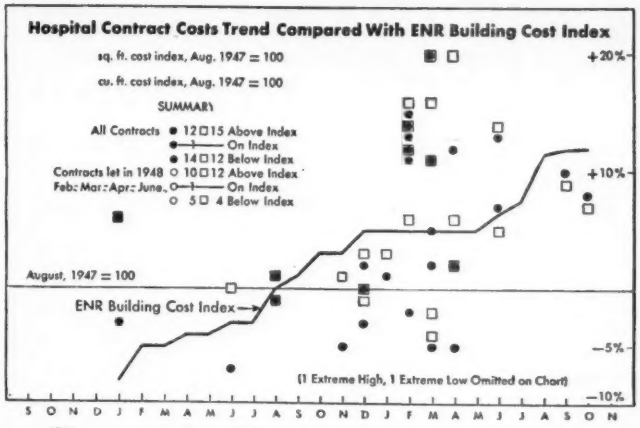
OWENS-CORNING FIBERGLAS

BUILDING MATERIALS

BUILDING INSULATION • ACOUSTICAL TILE AND BOARD • ROOF INSULATION • MEMBRANE FABRIC • ALSO BASIC MATERIALS FOR SIDING, ETC.

the cost index measuring the rise in materials prices and wage rates. The majority of these were awarded in November, December, 1947, and January, September and October, 1948.

The other half, which were higher than the basic cost rise, were awarded in February, March, April and June, concentrated bidding and contracting months. While this was a period of stable costs, the third round of wage increases was about to start. Also the basing point pricing of cement and steel had been upset and threatened price increases that subsequently developed. Most of these top half prices are in line with the material costs and wage rates that developed as construction was getting underway. This would indicate that the VA hospital program has attracted close bidding by contractors.


Hospital Contract Costs Trend Compared With ENR Building Cost Index
sq. ft. cost index, Aug. 1947 = 100
cu. ft. cost index, Aug. 1947 = 100
SUMMARY
All Contracts 12 15 Above Index
On Index
14 12 Below Index
Contracts let in 1948 10 12 Above Index
Feb.: Mar.: Apr.: June. On Index
5 4 Below Index
August, 1947 = 100
ENR Building Cost Index
+20%
+10%
-5%
-10%
(1 Extreme High, 1 Extreme Low Omitted on Chart)
S O N D J F M A M J J A S O N D J F M A M J J A S O N
1946
1947
1948

Analysis of Veterans Administration General Medical and Surgical Hospitals Design and Constructed under Supervision of Corps of Engineers—Except as noted

PROVIDENCE, R. I. (9/46) Main Building, Basement and 9 stories, 232,954 sq.ft. Reinforced Concrete Construction—Brick faced—Stone trim. Auxiliary Building, 44,044 sq.ft., similar in design and construction. 399 beds. $4,812,013 (VA design).

GRAND JUNCTION, COLO. (1/47) Main Building, Basement and 6 stories, 107,820 sq.ft. Reinforced Concrete Construction Pile Foundation—Monolithic concrete walls and trim. Auxiliary Buildings, 39,860 sq.ft., similar in design and construction. 152 beds. $3,406,000 (CA design).

MINOT, N. DAK. (6/47) Main Building, Basement and 7 stories, 132, 437 sq.ft. Reinforced Concrete Construction—Monolithic concrete walls and trim. Auxiliary Buildings, 30,732 sq.ft., similar in design and construction. 162 beds. $3,525,945 (VA design).

FRESNO, CALIF. (8/47) Main Building, Sub-Basement, Basement and 7 stories, 225,020 sq.ft. Structural Steel frame fireproofed—Monolithic concrete walls faced with Terra Cotta. Auxiliary Buildings, 33,172 sq.ft., similar in design and construction except faced with cement plaster. Power House faced with ceramic veneer. 250 beds. $5,645,100.

FT. HAMILTON (BROOKLYN), N. Y. (8/47) Main Building, Basement, Ground Floor and 19 stories, 690,324 sq.ft. Steel frame fireproofed on Pile Foundation—Stone faced and trim. Auxiliary Buildings, 53,899 sq.ft., similar in design and construction. Including pile foundation. 981 beds. $16,429,840.

SHREVEPORT, LA. (11/47) Main Building, Sub-Basement, Basement, 10 stories and Pent House, 404,160 sq.ft. Reinforced concrete frame—Brick faced—Stone trim. Auxiliary Buildings, 22,629 sq. ft., similar in design and construction. 452 beds. $9,745,099.

BUFFALO, N. Y. (12/47) Main Building, Sub-Basement, Basement and 14 stories, 686,314 sq.ft. Structural steel frame fireproofed on Caisson foundation—Limestone and gray soapstone faced and trim. Auxiliary Buildings, 47,412 sq.ft., similar in design and construction. 1,005 beds. $16,289,035.

GRAND ISLAND, NEBR. (12/47) Main Building, Basement and 7 stories, 194,456 sq.ft. Reinforced concrete construction—Brick faced—Stone trim. Auxiliary Buildings, 40,909 sq.ft., similar in design and construction. 201 beds. $5,244,854.

POPLAR BLUFF, MO. (12/47) Main Building, Basement and 7 stories, 196,919 sq.ft. Reinforced Concrete Construction—Brick faced—Stone trim. Auxiliary Buildings, 40,472 sq. ft., similar in design and construction. 201 beds. $5,079,500.

BIG SPRING, TEX. (1/48) Main Building, Basement and 6 stories, 204,044 sq.ft. Reinforced Concrete Construction—Brick faced—Stone trim. Auxiliary Buildings, 48,289 sq.ft., similar in design and construction. 246 beds. $5,642,654.

OMAHA, NEBR. (2/48) Main Building, Basement and 11 stories, 360,550 sq.ft. Steel framing fireproofed—Brick faced—Slate sills—Stone trim. Auxiliary Buildings, 29,953 sq. ft., similar in design and construction. 500 beds. $9,818,400.

IRON MOUNTAIN, MICH. (2/48) Main Building, Basement and 6 stories, 209,035 sq.ft. Reinforced Concrete Construction—Brick faced—Stone trim. Auxiliary Buildings, 39,247 sq.ft., similar in design and construction. 255 beds. $6,052,221.

FORT WAYNE, IND. (2/48) Main Building, Basement and 5 stories, 177,928 sq.ft. Reinforced Concrete Construction—Lower floors stone faced—Upper floors brick faced—stone trim. Auxiliary Buildings, 11,824 sq.ft., similar in design and construction. 200 beds. $4,784,039.

LITTLE ROCK, ARK. (2/48) Main Building, Basement, Ground Floor and 10 stories, 378,228 sq.ft. Reinforced Concrete Construction—Lower floors granite and stone faced—Upper floors brick faced—Stone trim with Terra Cotta panels. Auxiliary Buildings, 20,249 sq.ft., similar in construction—Brick faced—Field stone trim. 500 beds. $10,135,216.

BECKLEY, W. VA. (2/48) Main Building, Basement and 6 stories, 193,278 sq.ft. Reinforced Concrete Construction—Brick faced—Stone trim. Auxiliary Buildings, 11,552 sq.ft., similar in design and construction. 203 beds. $5,136,646.

WILMINGTON, DEL. (2/48) Main Building, Ground Floor and 8 stories, 271,533 sq.ft. Reinforced Concrete Construction on pile foundation—First floor portion stone faced—remainder brick faced. Auxiliary Buildings, 40,187 sq.ft., similar in design and construction. 322 beds. $7,147,375.

ALTOONA, PA. (3/48) Main Building, Sub-Basement, Basement and 7 stories, 182,153 sq.ft. Reinforced Concrete Construction—Brick faced—Stone trim. Auxiliary Buildings, 23,845 sq.ft., similar in design and construction. $5,183,995.

WILKES-BARRE, PA. (3/48) Main Building, Basement and 11 stories, 387,869 sq.ft. Reinforced concrete Construction on pile foundation—Brick faced—Green stone sills—Stone copings. Auxiliary Buildings, 39,823 sq.ft., similar in design and construction. 470 beds. $11,097,060.

CLARKSBURG, W. VA. (3/48) Main Building, Basement and 6 stories, 190, 846 sq.ft. Reinforced Concrete Construction—Brick faced—Stone trim. Auxiliary Buildings, 20,602 sq.ft., similar in design and construction. 203 beds. $5,104,197.

ALBANY, N. Y. (3/48) Main Building, Basement and 15 stories, 739,950 sq.ft. Steel Construction fireproof on steel piling—Brick faced—Stone trim. 1,005 beds. $16,334,726.

SPOKANE, WASH. (3/48) Main Building, Basement and 8 stories, 157,241 sq.ft. Reinforced Concrete Construction—Monolithic Concrete Walls—Metal trim. Auxiliary Buildings, 33,497 sq.ft., similar in design with Brick Veneer on wood frame. 200 beds. $4,044,988.

NEWARK, N. J. (4/48) Main Building, Basement and 13 stories, 659,395 sq.ft. Reinforced Concrete Construction—Brick and stone faced—Stone trim. Auxiliary Buildings, 53,050 sq.ft., similar in design and construction. 910 beds. $16,479,533.

ERIE, PA. (4/48) Main Building, Basement and 8 stories, 181,624 sq.ft. Reinforced Concrete Construction—Brick faced—Stone trim. Auxiliary Buildings, 16,156 sq.ft., similar in design and construction. 208 beds. $5,158,233.

MANCHESTER, N. H. (6/48) Main Building, Basement and 6 stories, 160,618 sq.ft. Reinforced Concrete Construction—Brick faced—Stone trim. 151 beds. $3,666,430.

MILES CITY, Mont. (9/48) Main Building, 4 stories, 108,799 sq.ft. Reinforced Concrete Construction on pile foundation—Brick faced—Stone trim. Auxiliary Buildings, 42,393 sq.ft., similar in design and construction. 100 beds. $4,469,922.

SEATTLE, WASH. (10/48) Main Building Sub-Basement, Basement and 8 stories, 252,319 sq.ft. Reinforced Concrete Construction ("Seismic Type")—Part Stone faced—Part Ceramic Veneer. Auxiliary Buildings, 19,429 sq.ft., masonry veneer—Conventional design and construction. 300 beds. $6,311,650.

SAGINAW, MICH. (4/48) Main Building, Basement and 5 stories, 172,585 sq.ft. Reinforced Concrete Construction — Brick crete File Foundation—Brick faced—Stone trim. Auxiliary Buildings, 25,153 sq.ft., similar in design and construction. 200 beds. $4,517,767. (VA design and construction supervision).

MARLIN, TEXAS (6/48) Main Building, Basement and 5 stories, 172,595 sq.ft. Reinforced Concrete Construction — Brick faced—Stone trim. Auxiliary Buildings, 19,616 sq.ft., similar in design and construction. 200 Beds. $4,729,727. (VA design and construction supervision).

DENVER, COLO. (9/48) Main Building, Sub-Basement, Basement and 10 stories, 342,717 sq.ft. Structural Steel frame on Caissons foundation—Brick faced—Stone trim. Auxiliary Buildings, 19,624 sq.ft., similar in design and construction. 494 beds. $8,570,384. (VA design and construction supervision).

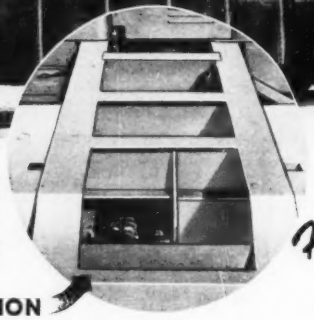
WAYNE CRANE *Announces the* NEW MODEL 44 TRUCK-MOUNTED "*Corsair*"

TRUCK SPEEDS ON THE HIGHWAY *Plus* POWER AND TRACTION FOR OFF-THE-ROAD WORK

CAPACITY

½-Yard Shovel, Trench Hoe, Dragline, Clamshell; Also Magnet, Pile Driver or 10-Ton Crane.

Truck-mounted WAYNE CRANE CORSAIR travels at truck speeds . . . enables you to work a large territory profitably . . . eliminates loading time and expensive crane hauling equipment. CORSAIR is easily convertible, too . . . just the machine for the owner who wants to cover a full job range.



Special HEAVY-DUTY CARRIER CONSTRUCTION

(Engineered for Crane Service)

The CORSAIR truck carrier is specially built for heavy construction work . . . is designed throughout to provide maximum stability, rigidity and boom clearance.

• CRANE FEATURES •

Fast, 5½ r.p.m. Swing • Enclosed Gears Running in Oil • Oversize Clutches, Drums and Shafts • Full-Vision Safety Cab • Worm-Driven Boom Hoist • Anti-Friction Bearings Throughout

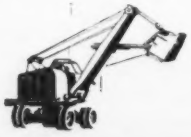
Here's why "CORSAIR" IS TODAY'S TRUCK-CRANE BUY:

MOBILITY—Truck speed between jobs assures more productive hours per day. Auxiliary transmission—10 speeds forward, two reverse.

POWER—CORSAIR offers tandem drive, 8-tire or 10-tire traction—has special differential lock for heavy, off-the-road work.

VERSATILITY—Converts easily to Shovel, Trench Hoe, Pile Driver, Dragline, Clamshell, Utility Crane, Magnet Crane. Outrigger equipped for greater stability.

WAYNE CRANE DISTRIBUTORS IN PRINCIPAL CITIES MAINTAIN COMPLETE SERVICE AND PARTS FACILITIES



ALSO AVAILABLE

WAYNE CRANE Model 22—wheel-mounted, single engine, self-propelled machine.

Write NOW for Complete Information

Mfd. by WAYNE CRANE DIVISION—AMERICAN STEEL DREDGE COMPANY INC.—Fort Wayne 1, Indiana, U. S. A.

Postwar Price Experience on Dams

Corps of Engineers studies prices paid contractors in relation to ENR Construction Cost Index

To sharpen up its construction cost estimating pencils the Corps of Engineers has developed construction price indexes based on bids by contractors on its own civil works projects.

These indexes are of two types, the first showing variations in unit price according to quantities involved, cu. yds. of concrete or excavation or lbs. of steel for example, and the second a weighted composite of elements representing more than 70 percent of the total cost of the work.

A multiple attack on cost estimating has resulted from this study, carried on in the Project Planning Branch, Engineering Division of Civil Works, Office, Chief of Engineers, under direct supervision of G. A. Wallace, Chief of the Branch, and general supervision of R. W. Stuck, Chief of the Division.

Contractors' bids show what prices have been paid for construction in the past. Engineers' estimates have to predict what prices will have to be paid in the future. Thus unit bid price are not enough: a cost trend index is needed as a guide in the projection of past experience to current conditions and future outlook.

Used in preparing projects for bids and selecting the successful bidder, cost estimates are required for budget purposes; as a basis for determining the economic justification of proposed future projects currently under investigation in reports directed by Congress, and for revising estimates of cost of works recommended in previous years in reports to the Congress.

These new price indexes, reported here, represent the average for the country as a whole. Since individual prices for some items deviate rather widely from the average it was found necessary to use six-month periods as a basis for computing values.

The first index, showing the effect of quantity on price is illustrated by an example in which mass concrete was used. The range in cost of mass concrete for gravity concrete dams is shown in Fig. 1. Average cost lines were determined by plotting low bidder unit price for this item against volume of concrete on all dam projects for the years indicated.

In all, 12 such charts have been prepared, covering these major construction items: Common excavation; rock excavation; embankment (including borrow and compaction); reinforcing steel; structural steel; sheet steel piling; and six classes of concrete. It was found impracticable to use shorter periods of time than six months due to insufficient data to indicate clearly a cost change. In some cases it has been necessary to use a yearly basis, as in the case of mass concrete.

Due to the moratorium on construction during the last half of 1946 there is no cost data for that period. Since one of the purposes of this study was to determine the increase in cost

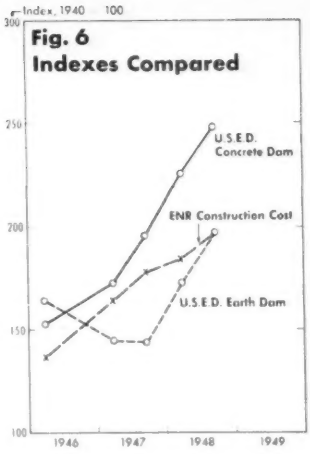


Fig. 6 Indexes Compared

of construction items following the relatively stable prewar period, low bid prices for work advertised from 1939 through 1941 were worked up as the base unit price and plotted as a single price line on each graph. This price line represents the average bid price for the quantity for the country as a whole. For many of the charts there is considerable deviation from this average. However, in most cases the grouping of points is such that a line originally drawn by eye was later found to be substantially correct when computed by least squares.

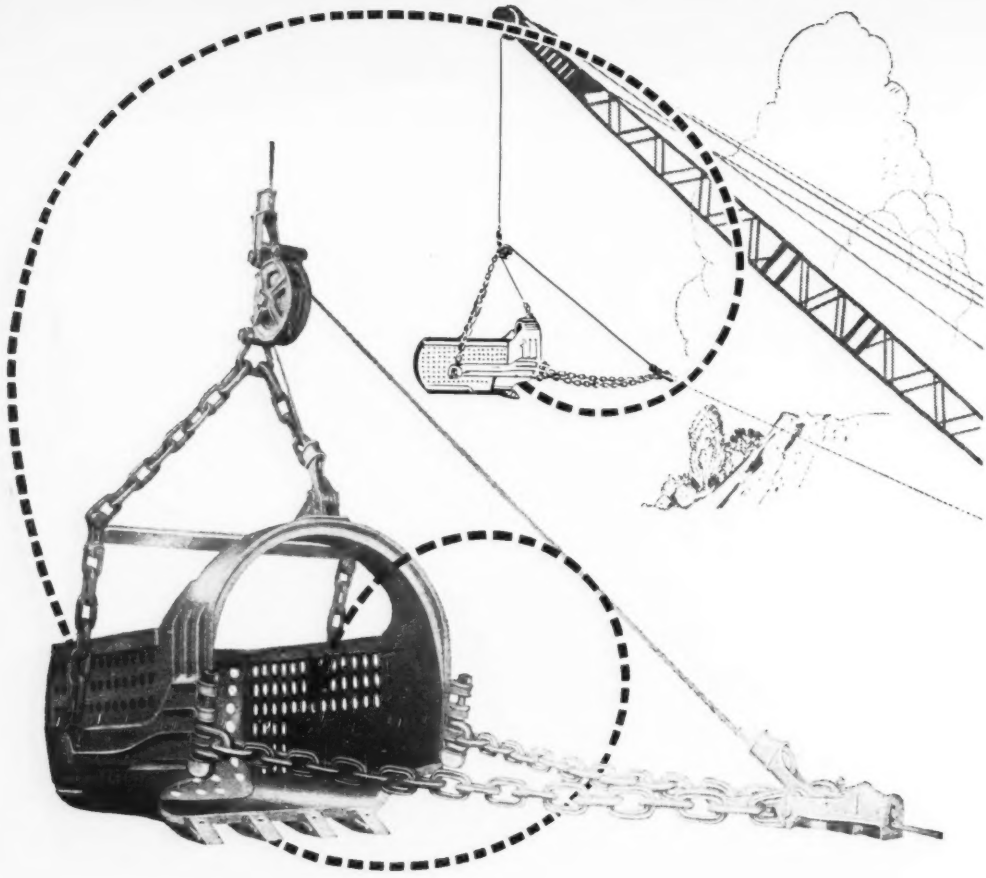
Cost indexes for a concrete dam and also an earth dam are compared in Fig. 2, with the ENR construction cost index for the same period using 1940 (ENR 241.96) as a base of 100.

TABLE 1, CONCRETE DAM INDEX—1940=100

Item	Quantity	1940 Unit Price	1940 Cost	Jan.-June 1946 Cost	Index	Jan.-June 1947 Cost	Index	July-Dec. 1947 Cost	Index	Jan.-June 1948 Cost	Index	July-Dec. 1948 Unit Price	July-Dec. 1948 Cost	Index
Common Excavation	160,000 c.y.	.315	$50,400	$73,600	146	66,080	131	59,360	118	93,600	186	.695	111,200	222
Rock Excavation	180,000 c.y.	1.50	270,000	369,000	137	448,200	166	513,000	190	594,000	220	3.16	568,800	211
Embankment	170,000 c.y.	.43	73,100	124,100	170	91,290	125	82,790	113	103,190	142	.66	112,200	154
Concrete Mass—Class VI	500,000 c.y.	5.40	2,700,000	4,300,000	159	4,775,000	177	5,500,000	204	6,600,000	244	14.30	7,150,000	265
Concrete—Class IV	47,000 c.y.	7.20	338,400	601,600	178	723,800	214	784,900	232	846,000	250	22.20	1,043,400	309
Concrete—Class II	13,000 c.y.	9.00	117,000	163,800	140	236,600	202	263,250	225	288,600	247	33.80	439,400	375
Reinforcing Steel	3,000,000 lbs.	.043	129,000	234,000	182	255,000	198	285,000	221	327,000	254	.125	375,000	291
Structural Steel	2,000,000 lbs.	.09	180,000	336,000	187	516,000	287	580,000	322	540,000	300	.244	488,000	272
Cement	560,000 bbls.	1.98	1,108,000	1,377,000	124	1,472,800	133	1,663,200	150	1,848,000	166	3.72	2,083,200	188
Total Cost	....		$4,967,000	$7,580,000	152	$8,585,000	173	$9,732,000	196	$11,240,000	226	.....	$12,371,000	249
Engineering News-Record Construction Cost	.....		100	.....	137	.....	164	.....	178	.....	184	.....	.....	197

TABLE 2, EARTH DAM INDEX—1940=100

Item	Quantity	1940 Unit Price	1940 Cost	Jan.-June 1946 Cost	Index	Jan.-June 1947 Cost	Index	July-Dec. 1947 Cost	Index	Jan.-June 1948 Cost	Index	July-Dec. 1948 Unit Price	July-Dec. 1948 Cost	Index
Common Excavation	650,000 c.y.	.28	$182,000	$266,500	147	$240,500	135	$215,800	118	$341,250	188	.625	$406,250	223
Rock Excavation	66,000 c.y.	1.56	102,960	141,240	137	172,200	167	195,360	190	227,700	221	3.31	218,460	212
Embankment	3,300,000 c.y.	.332	1,095,600	1,881,000	172	1,369,500	125	1,280,600	115	1,551,000	142	.515	1,699,500	155
Concrete—Class IV	20,800 c.y.	8.45	175,760	308,880	176	369,200	210	398,320	227	428,480	244	25.30	526,240	300
Concrete—Class II	7,200 c.y.	11.40	82,080	112,320	137	158,400	193	177,840	216	192,960	224	40.00	288,000	350
Reinforcing Steel	1,800,000 lbs.	.044	79,200	142,200	180	154,800	195	174,600	218	199,800	252	.128	230,400	291
Structural Steel	230,000 lbs.	.10	23,000	43,240	188	65,780	286	74,060	321	68,540	299	.286	65,780	286
Cement	37,200 bbls.	2.43	90,400	112,350	123	123,880	137	135,400	150	149,900	166	4.54	168,900	187
Total Cost	.....		$1,831,000	$3,008,000	164	$2,654,000	145	$2,632,000	144	$3,160,000	173	.....	$3,604,000	197
Engineering News-Record Construction Cost	.....	.....	.....	.....	137	.....	164	.....	178	.....	184	.....	.....	197



Your Profit is in your BUCKET

3 TYPES
FOR
EVERY DIGGING PURPOSE
3/8 to 40 Cu. Yds.

A full bucket every time . . . and the minimum of maintenance cost, both in dollars spent and in time consumed, will result in more profitable payloads for you. Dragline operators are becoming more and more enthusiastic over the rugged construction, full payloads, and low upkeep of Hendrix Dragline Buckets.

Hendrix Dragline Buckets are engineered by men with "know how" to give you bigger payloads at lower cost. Ask the man who uses one . . . he knows!

HENDRIX *Lightweight* **DRAGLINE BUCKETS**

For descriptive literature ask your dealer or write to

HENDRIX MANUFACTURING CO., INC.

MANSFIELD — LOUISIANA

The components of this index as to quantities is shown in Table 1 and 2. These quantities represent the average quantity of 16 concrete dams reflecting 74.6% of their total construction costs and 29 earth dams reflecting 70.2% of their total construction costs. Unit prices used are the prices for the various years applicable to the index quantity as obtained from the price curves discussed in the previous paragraph. Where yearly price lines were shown on the unit price graphs, the half year price is obtained by interpolation. Thus a basis is established for projecting the government estimate with greater refinement and in line with current cost trends.

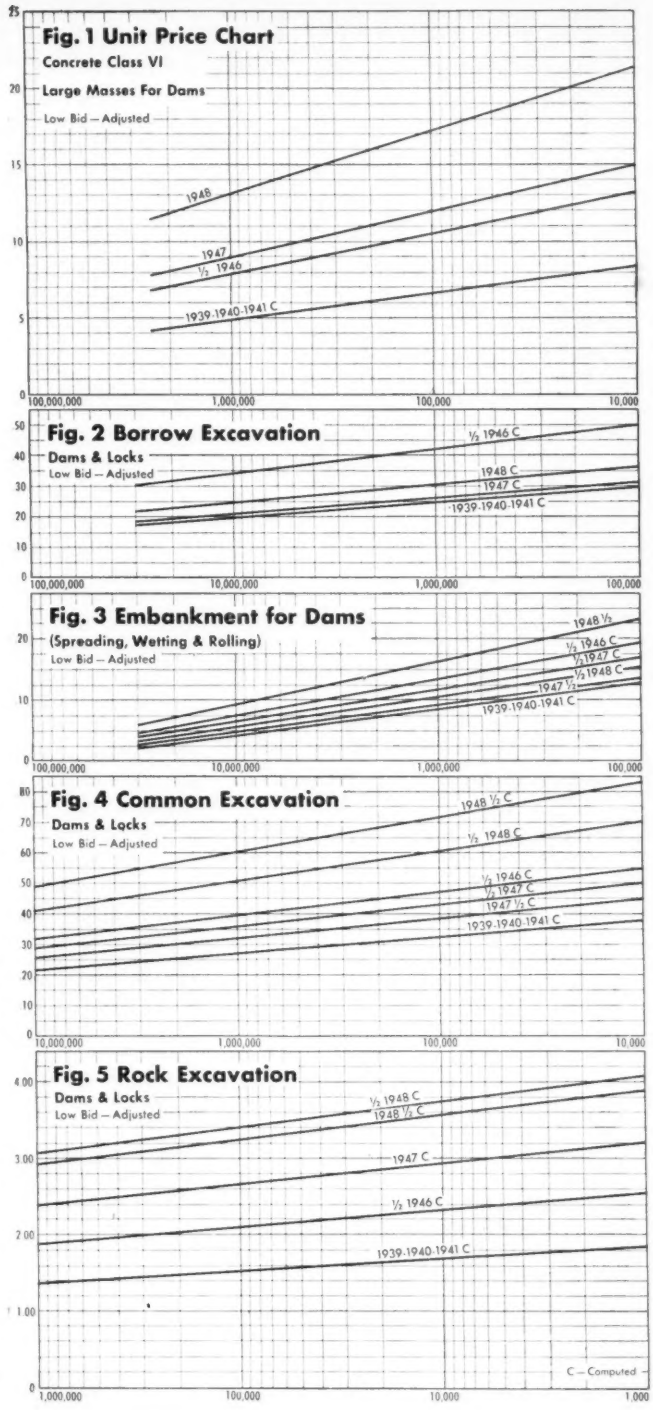
Comparing estimates with bids

In using the government estimate for comparison with the bids of prospective contractors as a basis of award, the Corps of Engineers reviews this estimate for major jobs prior to bid openings. In addition it makes a continuing study of the relation between the government estimate and the low bid for all work for which bids in excess of $100,000 have been received. Results of this study follow.

Bidding experience for Civil Works construction in the years 1947 and 1948, where the low bid was in excess of $100,000, shows that 3,815 bidders responded to 815 invitations with low bids totaling $781,000,000. The average low bid was 4.5% over the government estimate (computed without profit). The last 6 months the 3.22% margin between low bids and government estimate of cost is the lowest of the 4 periods. (Table 3) Bid margins in October, November and December 1948 of 2.4, 2.0 and 1.2 percent, respectively, average 1.80 percent for the last quarter of 1948, and illustrate recent favorable bidding. This continued and consistent drop in differential between the low bid and the government estimate may be interpreted as a possible reduction in cost to the government through a reduction in the amount of contingent cost for labor and materials which contractors have, in the immediate past, been adding to their computed cost to arrive at their bid price.

Continuing interest and ability of the construction industry to accept additional work is indicated by the number of bids received per invitation, which continues essentially along the mean of 4.68 for the entire period. (Table 3)

As Civil construction resumed in



Figures in vertical column at left show dollars per cubic yard; figures at bottom of charts show volume in cubic yards.

ARE YOUR FORM COSTS HIGH?
Save . . . with UNI-FORMS

Window boxes nailed directly to forms
Reinforcing steel is easily placed.
Projecting Ties ready to receive closure forms
Anchor slot nailed directly to forms
ONE SIDE OF WALL COMPLETELY ERECTED, LINED AND BRACED
Stock length liner materials —no cutting required
ALIGNMENT AND BRACING REQUIRED ON 1 SIDE ONLY!
Job-fabricated inside, corners easily assembled
Small wood filler speeds stripping
Pilasters easily formed using 3-loop UNI-FORM Tie
NOTE CLEAR WORKING AREA

Only UNI-FORMS have these advantages!

SAVE LABOR . . . . SAVE MATERIAL

- Faster erection . . . . easier stripping
- One side alignment
- Uni-Form Ties quickly and easily tie, lock and spread panels into a tight, rigid form—automatically accurate forming
- Reduce your labor and material costs . . . . save from 25% to 50%.

Let us show you how to cut your form costs. Send us a set of plans for an estimate.

OVER 5,000,000 Square Feet now in use

UNIVERSAL
Form Clamp Company
Founded 1912
1238 N. Kostner • Chicago 51

The UNI-FORM System of Wall Form Construction is saving building time and costs on every type of concrete construction:

HOUSING • SCHOOLS • HOSPITALS • FACTORIES
THEATRES • STADIA • SEWER & WATER SYSTEMS
TREATMENT AND DISPOSAL PLANTS

RENTED SOLD RENTED WITH A PURCHASE OPTION

1946, fear of postwar instability had its immediate effect on bidding, particularly for the longer term contracts. The spread between the government estimate of cost and the low bids submitted by contractors increased as the completion period for the work increases. This differential rises for 3.4% for work of 1 year or less to 36.8% for work extending beyond a 4-year period. (Table 3) It became immediately apparent that, to avoid the contingency which prudent contractors felt constrained to add to cover possible rise in costs for the longer-term contracts, work must be subdivided into short term, one type operation in so far as possible.

This subdivision of work wherever physically possible into embankment, tunnel, concrete, etc., contracts, each of short duration, has been quite successful. Response of the contractors to the shorter term type of contract is evident from the percent differential and number of bids received per invitation shown in Table 3. The two-year contract appears to be the most popular having elicited 5.4% bids per invitation as compared to the general average of 4.7. Longer projects, involving greater and longer commitments, restrict the field of bidders and the number of bids drop rapidly as period and volume of work increase.

TABLE 3, SUMMARY OF 1947-1948 BIDDING EXPERIENCE
CIVIL WORKS CONSTRUCTION BIDS OVER $100,000

	Total Amount of Low Bids	Average Amount of Low Bid	Average % Above Govt. Est.*	Number of Invitations	Total Bids Received	Ave. No. of Bids per Invitation
By 6 Month Period						
Jan.-June '47	$196,144,000	$948,000	3.25%	207	1,032	4.99
July-Dec. '47	131,928,000	631,000	5.52	209	878	4.20
Jan.-June '48	205,896,000	1,163,000	6.51	177	905	5.11
July-Dec. '48	247,077,000	1,112,000	3.22	222	1,000	4.51
Jan. '47 thru Dec. '48	$781,045,000	$958,000	4.53%	815	3,815	4.68
*Computed without profit						
By length of contract						
Less than 1 year	$218,770,000	$353,000	3.40%	621	2,818	4.54
1 to 2 years	193,832,000	1,240,000	6.75	156	839	5.38
2 to 3 years	118,000,000	4,720,000	9.38	25	109	4.36
3 to 4 years	104,607,000	13,080,000	13.44	8	35	4.38
4 years or more	145,836,000	29,170,000	36.76	5	14	2.80
Total for all bids	781,045,000	$958,000	4.53%	815	3,815	4.68

Another postwar experience in connection with Civil Works construction has been the expansion of the practice of a number of contractors combining and submitting a bid as a joint venture. It is realized that there are several good and valid reasons for this practice on large contracts. However, there have been a number of cases where as many as from six to eight contractors have combined in a joint venture on contracts which it is believed any one of them were capable of undertaking individually. It is rather obvious that a joint venture limits competition by concentrating eight prospective bidders into one bid. It is also probable that this practice results in higher bid prices, as the bid price finally agreed upon by the partners in the venture tends to be at least equal to or greater than the independent individual estimates of half of the members. It is the hope of the Corps of Engineers that the growing tendency of large and substantial firms to participate in such joint bidding ventures on jobs which each of them individually is in a position to undertake, will not become a permanent part of the post war contracting business.

Unit Prices, New York City Housing

New York City Housing Authority contracts for 14 new low-rent projects let since May, 1948 average $1.06 per cu ft. Foundations and superstructure account for 80 cents of each average contract dollar. Cubic foot costs for mechanical trades in the 172 apartment houses covered in this study, average 8.7 cents for heating, 3.6 cents for electricity, and 9.7 cents for the plumbing facilities. Elevator and piling costs are also included in the total contract, piling as a part of the foundations, elevators as separate contracts. These are a continuation of the series of unit costs published in ENR May 27, 1948 for Housing Authority projects let in 1946-'47.

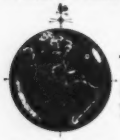
CONTRACT TOTALS AND UNIT PRICES ON PUBLIC HOUSING
1948-49 awards by N. Y. City Housing Authority

Project Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Project	**Woodside**	**Eastchester**	**Gov. Smith***	**Albany**	**South Beach**	**Sheepshead Bay**	**Dyckman**
Total Constr. Rooms	5,640	3,810	4,716	3,384	1,717	4,392	4,468
Total Apartments	1,357	874	1,140	829	422	1,056	1,167
Rooms per Apartment, Average	4.16	4.36	4.14	4.08	4.07	4.16	3.83
Total Cu. Ft	11,064,902	7,965,220	9,302,922	7,082,630	3,921,651	9,769,733	10,119,918
Award Date	5-26-48	9-23-48	10-4-48	10-25-48	11-1-48	11-15-48	11-26-48†
Total Cost	11,761,568	8,585,299		7,896,564	4,888,853	10,786,919	
Total Contract Cost	**10,812,409**	**8,003,291**	**10,864,881**	**7,224,296**	**4,481,120**	**10,515,737**	**10,033,210**
Cost Per Constr. Room	1,917	2,101	2,304	2,135	2,610	2,394	2,246
Cost Per Apartment	7,968	9,157	9,531	8,714	10,619	9,958	8,597
Cost Per Cu. Ft	.977	1.004	1.167	1.02	1.14	1.076	.991
Foundations and Superstructures	**7,843,784**	**6,142,000**	**8,518,750**	**5,562,000**	**3,390,700**	**8,080,000**	**7,706,300**
Cost Per Constr. Room	1,390.74	1,612.07	1,806.35	1,643.61	1,974.78	1,839.71	1,724.78
Cost Per Apartment	5,780.24	7,027.46	7,472.59	6,709.29	8,034.83	7,651.51	6,603.51
Cost Per Cu. Ft	.709	.771	.916	.785	.864	.827	.761
Heating	**978,000**	**675,401**	**746,626**	**513,777**	**394,660**	**770,777**	**814,000**
Cost Per Constr. Room	173.40	177.27	158.32	151.82	229.85	175.50	182.18
Cost Per Apartment	720.71	772.77	654.93	619.75	935.21	729.90	697.51
Cost Per Cu. Ft	.088	.085	.080	.073	.1006	.079	.080
Electricity	**399,470**	**283,900**	**376,000**	**273,000**	**178,300**	**346,470**	**329,000**
Cost Per Constr. Room	70.83	74.51	79.73	80.67	103.84	78.87	73.63
Cost Per Apartment	294.38	324.83	329.82	329.31	422.51	328.10	281.92
Cost Per Cu. Ft	.036	.036	.040	.038	.045	.035	.033
Plumbing	**1,134,700**	**715,865**	**998,900**	**721,419**	**376,444**	**949,494**	**889,000**
Cost Per Constr. Room	201.19	187.89	211.81	213.18	219.24	216.18	198.98
Cost Per Apartment	836.18	819.07	876.23	870.22	892.05	899.14	761.78
Cost Per Cu. Ft	.103	.089	.107	.102	.095	.097	.088
Elevators	**456,455**	**186,125**	**224,605**	**154,100**	**141,016**	**368,996**	**294,910**

* 7 of 12 proposed buildings—Gov. Smith. † Foundation contract date only. Cu. ft. quantities used are preliminary—subject to minor revision.

NORTH • EAST • SOUTH • WEST • IT'S SCHRAMM!

CHOOSE . . . as others have — THE MODEL THAT BEST FITS YOUR NEEDS!



There's a Schramm Air Compressor, size and model, to meet your specific needs!

Below are listed nine of the many Schramm models, portables ranging from 20 to 420 cu. ft. of actual air, the stationary ranging from 2 to 600 cu. ft. displacement.

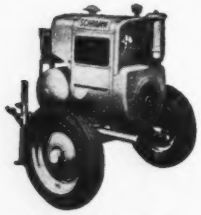
On all models performance records are evidence of their high quality. You will find the name Schramm written on every important page in compressor history.

Features you get in Schramm are: 100% water cooled, assuring ideal performance summer and winter; mechanical intake valve, forced feed lubrication, and electric-starter starting. All Schramms are compact, lightweight, easy to operate.

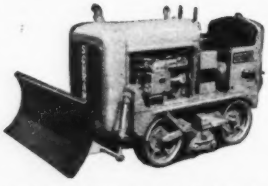
We invite you to write today for fully illustrated catalog describing in detail each of the Schramm Air Compressors shown here . . . plus a wide range of other models. We feel the Schramm story is a good one, and offers you a sure way to get your many compressed air jobs done quickly, efficiently, and economically.

SCHRAMM INC.

THE COMPRESSOR PEOPLE • WEST CHESTER • PENNSYLVANIA



20/35 Model Compressor



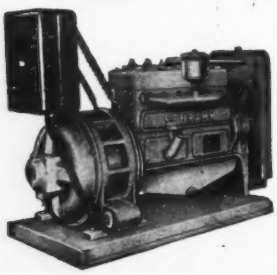
Self-Propelled with Hydraulic Backfill Blade

Two-Wheel Trailer Mounting with Tool Boxes

Skidded for Truck Mounting

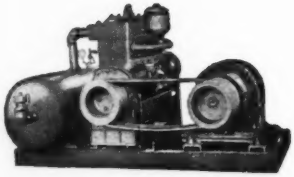
Truck Mounted

Diesel Engine Drive



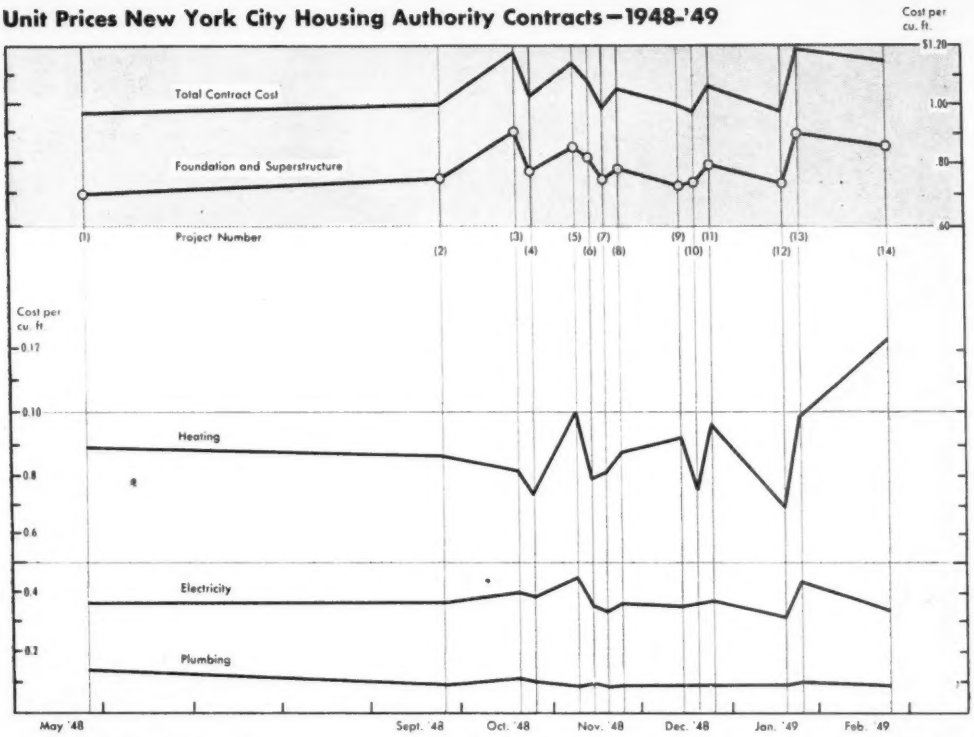
Built-in Motor Drive with Cooling Unit and Starter

"V" Belt on Flat Pulley Drive



"V" Belt Drive with Air Receiver

Unit Prices New York City Housing Authority Contracts—1948-'49



The high cu. ft. contract cost is at the Todt Hill project, $1.19, let in January, 1949. This is 21 percent higher than the contract cost of the Lester W. Patterson project for which contracts were let in the same month. The low contract cost per cu. ft. during these 10 months is for the Woodside project, let in May 1948, at 97.7 cents per cubic foot.

From May, '48 to January '49 construction materials prices and wage rates as measured by the ENR building Cost Index went up 6 percent.

The high cu. ft. foundation and superstructure contract unit price is at the Governor Smith houses, let in October of 1948, 91.6 cents.

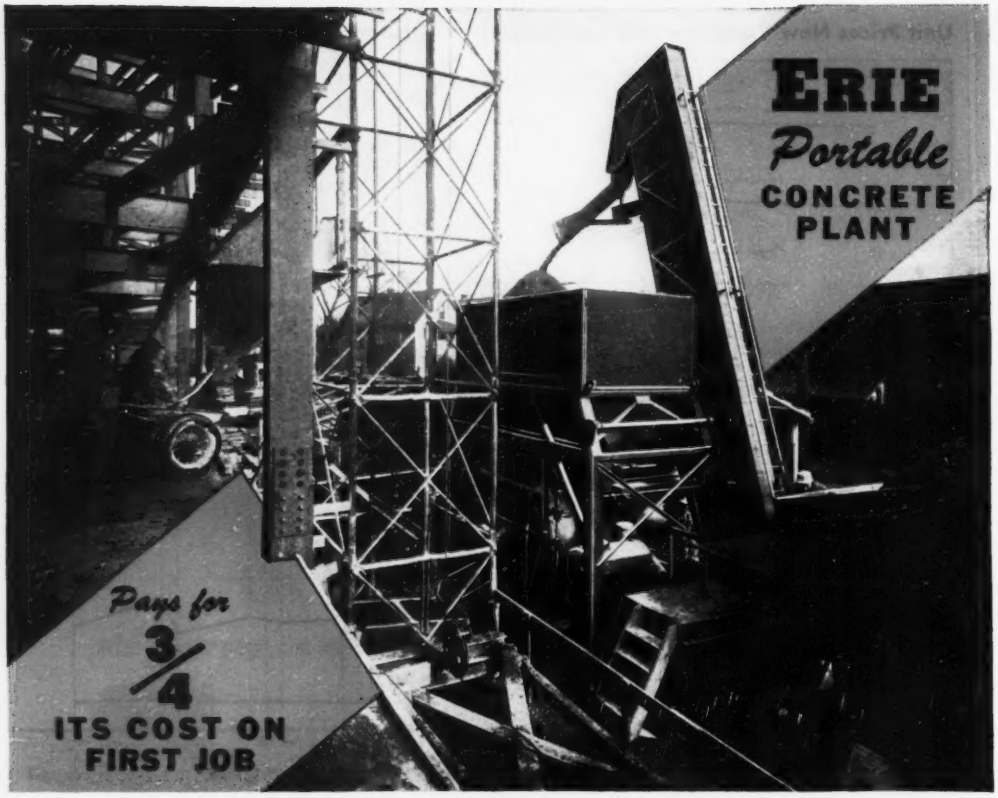
Nostrand, put under contract in February 1949, has the highest cu. ft. heating and ventilating price, 12.3 cents.

For electrical contract prices, South Beach is high at 4.5 cents per cu. ft. Reported plumbing unit prices were highest at Governor Smith, 10.7 cents per cu. ft.

CONTRACT TOTALS AND UNIT PRICES ON PUBLIC HOUSING
1948-49 awards by N. Y. C. Housing Authority

Project Number / Project	(8) Glenwood	(9) Gun Hill	(10) Bronx River	(11) Pelham Parkway	(12) Patterson	(13) Todt Hill	(14) Nostrand
Total Constr. Rooms	4,620	2,766	5,344	4,818	7,624	1,923	4,398
Total Apartments	1,188	738	1,246	1,266	1,791	502	1,148
Room per Apartment, Average	3.89	3.75	4.29	3.81	4.26	3.83	3.83
Total Cu. Ft.	10,238,900	6,180,748	10,880,400	10,873,263	14,541,889	4,467,042	9,660,672
Award Date	11/26/48†	12/10/48†	12/22/48	12/30/48	1/7/49	1/18/49	2/3/49
Total Cost	.....	.....	11,401,329	12,627,056	15,426,805	5,729,475	.....
Total Contract Cost	10,764,796	6,225,931	10,669,796	11,665,142	14,223,876	5,308,211	11,121,959
Cost Per Constr. Room	2,330	2,250	1,997	2,421	1,866	2,760	2,528
Cost Per Apartment	9,061	8,436	8,563	9,206	7,941	10,574	9,688
Cost Per Cu. Ft.	1.05	1.007	.980	1.07	.978	1.188	1.15
Foundations and Superstructures	8,203,686	4,593,152	8,161,000	8,801,000	10,887,000	4,050,157	8,369,000
Cost Per Constr. Room	1,775.68	1,660.58	1,527.13	1,826.69	1,427.99	2,106.17	1,902.91
Cost Per Apartment	6,905.45	6,223.78	6,549.76	6,951.82	6,078.73	8,068.04	7,290.07
Cost Per Cu. Ft.	.801	.743	.750	.809	.748	.906	.866
Heating	898,600	562,600	809,000	1,049,300	997,400	442,937	1,189,777
Cost Per Constr. Room	194.50	203.40	151.38	217.89	130.82	230.34	270.53
Cost Per Apartment	756.40	762.33	649.28	829.23	556.90	882.34	1,036.39
Cost Per Cu. Ft.	.087	.091	.074	.096	.068	.099	.1231
Electricity	364,170	217,330	394,760	405,000	469,500	193,829	333,000
Cost Per Constr. Room	78.82	78.57	73.87	84.05	61.58	100.79	75.72
Cost Per Apartment	306.54	294.48	316.82	319.90	262.14	386.11	290.07
Cost Per Cu. Ft.	.036	.035	.036	.037	.032	.043	.034
Plumbing	924,000	592,222	1,066,690	1,035,000	1,434,281	472,300	946,500
Cost Per Constr. Room	200.00	214.11	199.61	214.82	188.13	245.60	215.21
Cost Per Apartment	777.78	802.46	856.09	817.54	800.83	940.83	824.48
Cost Per Cu. Ft.	.090	.095	.098	.095	.099	.105	.098
Elevators	374,340	260,627	238,346	374,342	435,695	148,988	283,682

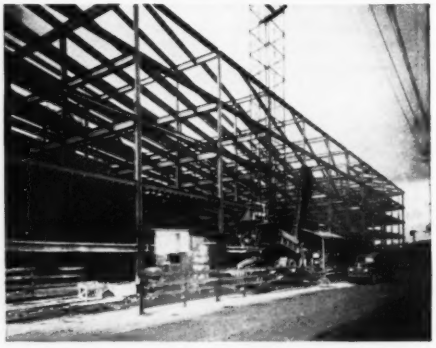
† Foundation contract date only. Cu. ft. quantities used are preliminary—subject to minor revisions.



SIEGFRIED CONSTRUCTION CO. *Making Concrete on the Job* **AT TRICO PLANT, BUFFALO, N. Y.**

5 FLOORS • 5000 YDS • HIGH TEST CONCRETE

THIS Erie Portable Concrete Plant discharges each 1 yard batch to tubular tower, keeping buggy gang moving at top speed just behind the form builders and reinforcing bar teams. Aggregates are hauled 9 miles. Bag cement is stored under cover at the machine. One man operates weigh-batching of aggregate and water. Hydraulic control of all gates permits finger touch action. Second man feeds bag cement and supervises aggregate unloading to truck hopper which discharges to 60 ton/hr. vertical bucket elevator. Owner reports "a substantial saving on concrete laid will be effected on this 5,000 yard job". *Mounted on 8 pneumatic tires the plant can be quickly knocked down and towed to the next job.* Let's have your concrete making problem.



General view of Trico Plant showing 2nd floor of concrete being laid. The Portable Concrete Plant next to the building does not obstruct traffic.

Write for specific data on the Erie Portable Concrete Plant for your work.

ERIE
STEEL CONSTRUCTION COMPANY

193 GEIST ROAD • ERIE, PENNSYLVANIA

AVERAGE BID PRICES FOR HIGHWAY CONSTRUCTION BY STATES—FOURTH QUARTER, 1948

Projects Utilizing Federal-Aid Highway Funds
Public Roads Administration, Federal Works Agency

	Aver.	Ala.	Ariz.	Ark.	Cal.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kans.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
Roadway Excavation, per cu. yd.																										
Borrow	72		45		1.26	1.43	.66	1.29				.54	.51	.72			.38	.77	.77	.65	.50	.69	.47	.33		.92
Common	37	.31		1.25			.55	1.21			.35		.51	.53	.23	.24		.45	.71		.40	.51	.28	.28	.45	
Unclassified	48	.63	.99	1.00	.86	.61				.47	.38	.81	.88			.20	.57		1.09	.40			.28		.40	.41
Rock, Solid	1.40	1.00					1.80	14.00					2.41	4.00	1.64	1.83			4.09		2.66	3.22	1.04		1.47	
Structural Excavation, per cu. yd.																										
Common, Dry	3.14			2.12		2.55		5.00				2.24			3.10	5.87	4.24		1.54		5.33	1.69	3.98		4.68	3.59
Unclassified	3.88	4.15	3.04		4.87		3.34	4.80			5.12	13.35	5.00			2.28	4.08			3.01		7.08	2.92		3.21	28.60
Steel, per lb.																										
Pavement Reinforcement	081						.075	.189					.067	.124				.085				.068				
Structural Reinforcement	116	.113	.138	.147	.113	.144	.103	.096		.109	.096	.125	.128	.117	.124	.113	.100	.126	.138	.124	.118	.089	.127	.109	.116	.170
Structural Steel	148	.219	.175	.200	.140	.160	.188	.149		.108	.110		.146	.148	.155	.143		.287	.150	.203	.138	.103	.156	.130	.147	.202
Bases, per sq. yd.																										
Gravel and Clay Gravel	37	.35			.67	.24	1.27					.14	.88	1.90			.53	.79	.34			.31	.43	.31	.90	.32
Macadam or Stone	99	.57					1.22	2.02		.95	1.01		1.03			.92	2.07		1.16		.57				.90	
Portland Cement Concrete	3.62						2.78	3.50					4.79					3.17				3.18			4.64	
Surfaces per sq. yd.																										
Gravel and Clay Gravel	14			.56								.15	.35		.11	.08	.26			.46		.43	.12	.25	.13	.20
Bituminous Surface Treatment	27	.29			.31			.39		.35	.39	.15						.43						.37	.20	.26
Bituminous Road-Mix	45				.38							.38	.67			.55	2.80		.38							.47
Bituminous Intermediate Surfaces	97	.51			.86		1.12										1.78		1.11		.93	.45				
Bituminous Concrete	1.16						1.43	1.49					1.65				1.26			2.73	1.48	1.29			.78	
Portland Cement Concrete	3.71						3.68	4.28					5.40	3.30	4.01	3.97	4.21					3.17	3.72	3.32	3.64	
Pipe per lin. ft.																										
Cast Iron, 18-inch	10.47																									
Clay, 6-inch	1.08						1.23								.65							1.07	.28			
Concrete Reinforced, 24-inch	5.59	5.32					4.45	5.32		4.91	4.73		6.27		5.09	4.38	4.14	5.99	5.50		5.81	4.82	5.04	4.44	5.04	6.56
Galvanized Iron, 24-inch	4.91		5.00		4.70	5.50					4.00	4.13	4.93	5.45	4.33	4.11	4.24	5.71	4.86	5.00		4.17	4.77		4.11	7.64
Structural Concrete, per cu. yd.																										
Superstructures	53.98	54.10	65.00	60.00	61.47	75.85	42.43	57.00		64.97	48.61		74.72	61.60	47.52	50.67	40.83	68.53	43.62	58.78	47.00	44.15	56.25	45.70	84.38	67.93
Substructures	49.97	65.52	52.63	56.55		74.50	42.49	51.35		71.89	46.81	42.72	80.85	58.00	46.14	37.22			39.07	53.97	47.00	43.06	51.45	54.29	46.08	57.77
Foundations and Footings	48.58	61.34			47.45	75.17	42.22	36.45		52.99	47.34			51.66			48.00			45.00	47.00	43.42	36.70			

	Neb.	Nev.	N. H.	N. J.	N. M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W. Va.	Wisc.	Wyo.	Hawaii	Puerto Rico
Roadway Excavation, per cu. yd.																										
Borrow		.52	.61	.90		.69	.44	.38	1.06			1.09				.54	.38		.70	.63	.55	1.41	.52		2.70	.83
Common			.50	.79										.40			.43		.74		.33		.50			
Unclassified	.21	.63		4.32	.65	.74	.53	.19	.81	.40	.82	1.02		.26	.22	.50	.34	.50	1.19	.55		.79	.39	.34	1.01	.57
Rock, Solid			2.86	1.27			2.50										.92		3.08		1.22		4.00			
Structural Excavation, per cu. yd.																										
Common, Dry							8.39	5.27	4.48	5.41						2.46	2.50	2.06		7.63		5.63		3.73		
Unclassified	6.09	2.90	3.00	12.62	2.28	2.41	4.58	18.38	3.49	1.83	7.71	5.55			4.33	3.05	4.26	6.20	3.91	17.81	3.31	3.26	13.13	3.82	5.77	3.87
Steel, per lb.																										
Pavement Reinforcement					.300	.087			.075		.120	.078								.103	.120	.123				
Structural Reinforcement	.133	.133	.133	.165	.109	.126	.112	.140	.109	.098	.121	.117		.109	.123	.109	.106	.132	.120	.117	.120	.119	.120	.136	.166	.100
Structural Steel	.160	.167		.155	.150	.148	.140	.149	.157	.144	.180	.150		.160	.143	.120	.129	.268			.234	.132	.156	.159	.182	
Bases, per sq. yd.																										
Gravel and Clay Gravel		.23	.43	.74	.18	.52		.25	.97		.62				.49	.42	.35	.21	.58	.40	.50	.47	.34	.66		
Macadam or Stone				.93	.17	1.30	1.13		1.77		.33	2.13				.71				.76	.50	4.85			2.16	1.30
Portland Cement Concrete				3.40		4.01			4.16			8.22				3.18	4.04			3.25						
Surfaces per sq. yd.																										
Gravel and Clay Gravel	.09	.13						.15	.36	.22					.11	.40		.17			.29		.16			
Bituminous Surface Treatment			.19		.15	.43			.34	.14	.43	.67		.39	.42	.23	.18		.34	.24	.17					.35
Bituminous Road-Mix		.43	1.11		.41				.55			.70				.43		.39	.92				.40	.55		
Bituminous Intermediate Surfaces		1.26		1.25		1.15	1.18		.78		.72	1.35						.89		.69					1.98	
Bituminous Concrete				1.53		1.40		.85	1.10		1.56	1.40				1.41	.44			.87		2.00			1.71	
Portland Cement Concrete				4.90		4.30	4.14	4.95	3.89	2.91	3.86	5.12				3.34	2.86	3.50		3.67		6.25				
Pipe per lin. ft.																										
Cast Iron, 18-inch				10.41		15.00						9.00				.70										
Clay, 6-inch			.80			1.09		.79				1.75														
Concrete Reinforced, 24-inch	4.16	5.74	5.72	7.32	5.95	7.68	5.03	4.92	6.05	4.62	4.00	6.53		3.83	4.73	4.91	4.27	4.62	5.00		4.50	5.01	5.00	6.00	8.30	5.00
Galvanized Iron, 24-inch		4.59		7.73	4.43	9.86	4.74	4.11	4.89	4.42	5.50	5.84			5.74	4.00	4.99	4.61	4.73	4.14				5.11		
Structural Concrete, per cu. yd.																										
Superstructures	54.36	50.73	45.00	72.93	60.00	56.20	63.13	58.80	69.05	38.11	59.21	74.08		54.92	48.90	49.18	41.62	52.37	49.82	58.49	56.24	59.39	58.34	56.47	76.56	34.98
Substructures	52.27	51.34	49.47	50.59	39.81	47.08	56.38	60.74	58.34	46.02	62.72	50.49		49.80	54.09	43.30	44.67	53.89	40.54	48.50	46.92	57.16	53.07	49.60	75.26	40.00
Foundations and Footings			41.88	47.49		49.52	58.58	61.33	54.08	48.71	59.35			60.44	56.38	47.09			39.00	40.27	49.05	51.75	52.63		44.99	22.86

Note: The rates shown are the weighted average contract bid prices for contract quantities reported on.

This building would

examples of changes made during construction at low cost

DUST COLLECTING SYSTEM —its exact location was not determined until after the building was well along.

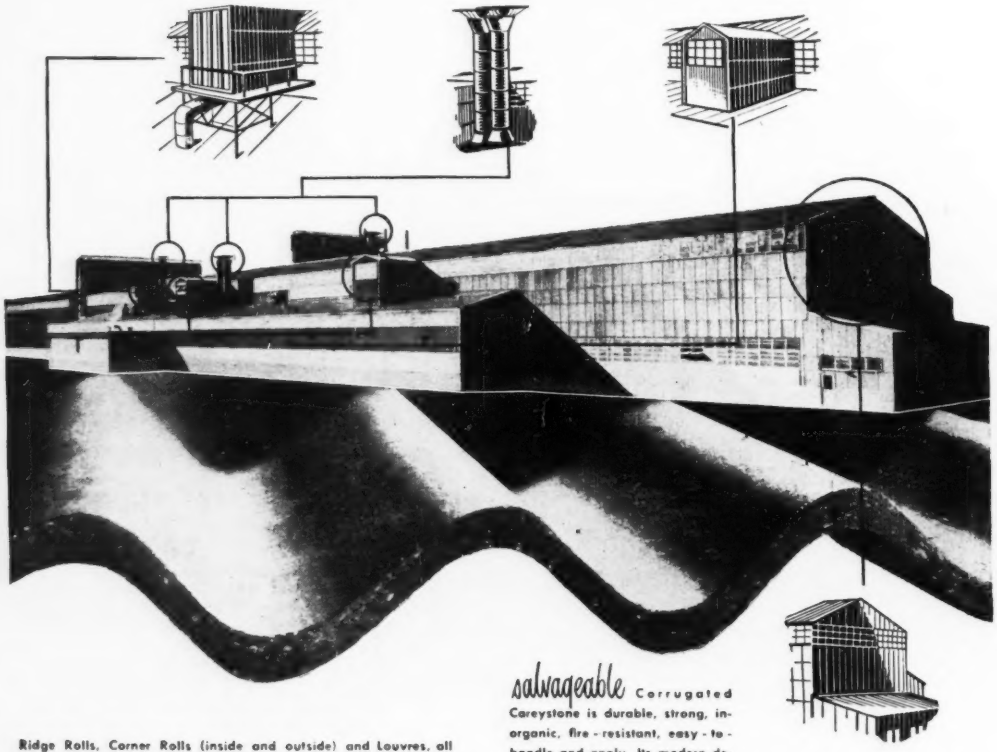
Due to the flexibility of Corrugated Careystone, even major changes and additions were made quickly and with relative ease and economy.

STACKS — to take off exhaust from paint and ceramic coating spray booths.

Careystone's resistance to fumes and heat made these additions practical and economical. No special protective materials were necessary.

PENTHOUSES—to house vertical conveyors at temperatures up to 150° F.

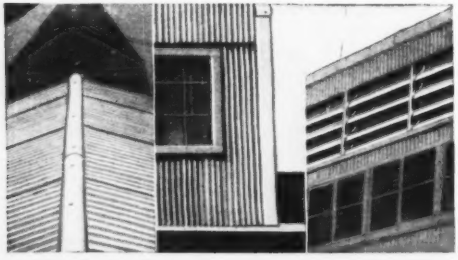
New wall openings made after walls were in place . . . with a minimum of time and expense. All Corrugated Careystone was reused in the new plan.



salvageable Corrugated Careystone is durable, strong, inorganic, fire-resistant, easy-to-handle and apply. Its modern design fits it for modern interiors and modern exteriors—for a new kind of modern construction.

END WALL—designed for future expansion. Wall can be dismantled and Corrugated Careystone reused if building is extended to gain more floor space.

Ridge Rolls, Corner Rolls (inside and outside) and Louvres, all made of Asbestos-Cement, are available from Carey in sizes to fit all construction requirements



easy application

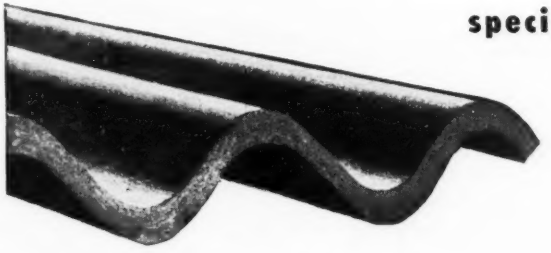
SAW IT **NAIL IT** **BOLT IT**

cost you 40% less, too, with Carey stone

We built this plant with our own products . . . to make more products to build more plants! We estimate we saved as much as 40% over conventional masonry construction by using Careystone Corrugated Asbestos-Cement Sheets. This should be real news for you—especially if you are making plans for a new building or changes in present ones. We needed to get a new plant into operation quickly. We did it by building it with Corrugated Careystone.

For commercial and industrial building and for all light-weight construction, we know of no building method that takes less time in erection; that withstands weather any better; that offers more flexibility in usage or expansion; that requires less maintenance; that provides more protection from fire, weather, decay and rot; or that costs less.

Most plants undergo some changes while under construction. Buildings built with Asbestos-Cement Careystone, Corrugated or in flat sheets, cost less to change, cost less to build, cost less to maintain!



SEE FOR YOURSELF. Write Carey for "Manual 808"—address Dept. 000

specifications of corrugated Carey stone

FOR WALLS • ROOFS • PARTITIONS

1. 4.2" Corrugation. 2. Approximately 1/8" thick 3. Weight: 3.75 lb. per sq. ft. 4. Length: Up to and including 12'. 5. Width: 42" 10 corrugations. 6. Maximum purlin span 4'6". 7. Maximum girt span 5'6".

Enclosure strips, fasteners and accessories, made especially for use with Corrugated Careystone, can also be furnished by Carey.

Flat Asbestos-Cement Sheets
85% Magnesia • Asbestos
Industrial Rock Wool
Pipe Coverings
Blocks • Batts • Papers
Built-up Roofing
Roof Coatings
Highway Products

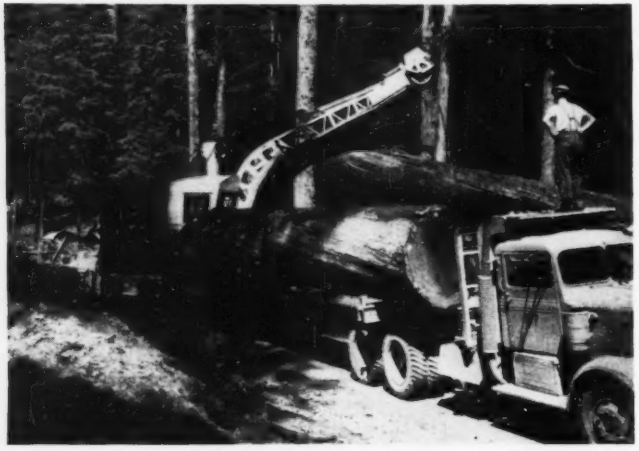
Carey

In Canada: The Philip Carey Co., Ltd.
1537 MacKay Street, Montreal 23, P. Q.

Offices in principal cities

THE PHILIP CAREY MANUFACTURING CO., CINCINNATI 15, OHIO

NEW PRODUCTS



Track-mounted Loader

This 71-ton "Trakloader," shown in the photograph loading logs on a truck trailer on a Simpson Logging Co. operation near Grisdale, Wash., has increased mobility of logging operations and is said to be of use on large construction projects. It is powered with a 200 hp. Cummins diesel motor and has a rated lifting capacity of 50 tons. It is equipped with a twin-disc torque converter, planetary two-speed drive and a 28-ft. goose-neck heel boom.—Washington Iron Works, Seattle, Wash.

Crane for R. R. Work

Model 205 Rail-Aid excavator is a specially designed rail propulsion car used with a crawler type crane for railroad work. The outfit consists of a crane, dragline, shovel and pull shovel. It is secured in position on well type propulsion car. It unloads quickly and easily. It is a useful labor aid for the road gang relaying and unloading rail, handling materials and timbers on bridge repair projects, and many other jobs. With dragline bucket suspended from the crane boom, Rail-aid does a fast job of cutting down an embankment, removing slides and ditching for better drainage. The crane moves off the propulsion car, whenever that becomes necessary, for a better operating position. It can be unloaded in 10 minutes.—Koehring Co., 3026 N. Concordia Ave., Milwaukee 10, Wis.

Comminutor

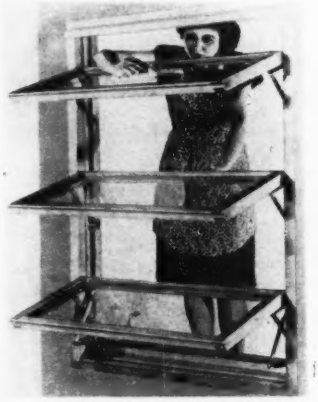
The Worthington comminutor is a device for cutting or shredding coarse solids directly in the flowing raw sewage. A screen, a mechanism for comminuting the screenings, and an electric weatherproof motor comprise the vertical, compact unit. Because the sewage is permitted to flow straight through the vertical comminutor screen no special channel construction is required. The comminuting unit is easily installed in any existing channel, requiring only a provision for four foundation bolts and a slight streamlining of the downstream channel to receive the comminuted sewage as it comes out.—Worthington Pump and Machinery Corp., Harrison, N. J.

Rubber Traffic Cones

These cones have the appearance of steel yet are made of safe, collapsible rubber. One of the most outstanding features is the durable flexible construction which means infrequent replacement because of breakage, distortion or wear. Lightweight construction makes them easy to handle and it has been found that traffic barriers can be set up in 1/10 the time. Many hundreds of them can be stacked and stored in a minimum of space when they are not being used.—Enterprise Development Corp., Burbank, Calif.

Portable Electric Hand Lamp

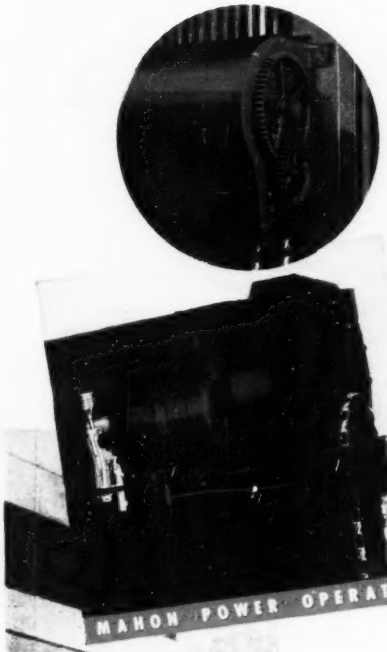
Lamp with 6-in. diam. head of chromium-plated 20-gage steel with triple-silvered reflector throws powerful 2,000-ft. beam. A built-in charger plugs into any 110-volt, a.c. circuit to make recharging the battery easy. Spillproof rechargeable battery with acid-proof plastic case does not leak whether lamp is held upside down, sideways or in any other position. Head has swivel attachment vertically with 170-deg. range. Charge indicator eliminates guesswork on condition of battery and does away with hydrometer tests.—U-C Lite Manufacturing Co., 1050 West Hubbard St., Chicago 22, Ill.



Awning-type Wood Window

An awning-type window is being marketed for use in light and heavy construction. A mechanism lowers each vent from the top as it opens outward. This permits easy cleaning; provides 100% controlled ventilation draft-free air circulation. Complete adjustment of the vents permits the directing of fresh air intake and exhausts stale air without causing drafts. Rain will not enter. Bronze weather stripping at top and bottom of sash assures a completely weathersealed and dust-proof window when closed. Operated by a crank below the stool, windows may be opened only a fraction of an inch or a full 85 degrees. The mechanism locks the window in any desired positions, making it burglar proof from the outside and safe for children inside. Screens and windows are easily put on the inside, from the inside.—Super Vent Co., 905 W. Worth Avenue, Chicago.

Rolling Steel DOORS



Manually • Mechanically • Power Operated

No door offers the inherent advantages of a good Rolling Steel Door . . . no other type of door offers the permanence of all-steel construction, the saving in space adjacent to door openings—and, most important, the satisfaction born of a lifetime of trouble-free door performance. These advantages are realized to the fullest degree in Mahon Rolling Steel Doors . . . comparison of details of construction and materials employed at critical points will reveal a greater door value . . . exclusive Mahon features will be found very desirable from an everyday operating standpoint. See Mahon's Insert in Sweet's Files for complete information, details and specifications.

THE R. C. MAHON COMPANY

Detroit 11, Michigan • Western Sales Division, Chicago 4, Illinois

Representatives in All Principal Cities

Manufacturers of Rolling Steel Doors, Shutters and Grilles, and Mahon Steel Deck for Roofs, Sidewalls, Partitions, Acoustical Ceilings, Permanent Floor Forms and Oversize Doors.

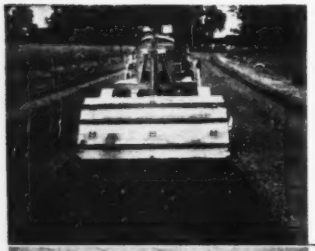
Seventy Five Mahon Rolling Steel Doors are installed in the new building illustrated above, which was built by Spence Bros., Gen. Contrs. Saginaw, Mich., for a large midwestern Foundry Company.

MAHON

Base Your Estimates on a SEAMAN Pulvi-Mixer

Get the real "low-down" on mixing costs — check the records Seaman Mixers have been making all over the country on all types of jobs.

Here is a mixer that is versatile . . . can handle a wider variety of mixing and pulverizing jobs . . . costs less to own and operate than any other type . . . that does as much work per hour as the largest machines and produces a mixture of the highest quality by actual test. Before you start your next job — get the facts from Seaman.



Bituminous

The Seaman Pulvi-Mixer handles all types of bituminous mixing with equal efficiency either in-place or from windrows, on new construction or resurfacing jobs.

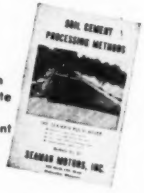
Processing with a Seaman assures a mix of uniform density; LATERALLY . because of the pitch of the tines, LONGITUDINALLY . because of the forward carry-over in the hood; VERTICALLY because of the adjustable depth control. You blend out "rich" and "lean" spots — compensate for variable aggregates — aerate excessive moisture in materials — and leave a shaped, level, graded surface ready for rolling.

Send For Bulletin No. 25. A new, authorative, 85-page booklet on all types of Soil Stabilization Methods.

Soil-Cement

In soil-cement processing, the *quality* of mix is extremely important — the soil must be finely pulverized, the cement and water thoroughly dispersed and mixed into the soil to form a homogenious mixture that can be readily compacted. The Seaman mixer on each trip pulverizes, mixes and remixes the materials to obtain the uniform blending possible only with multiple passes. The high velocity rotor disperses the materials vertically, laterally and longitudinally from the sub-grade to the surface over the entire processing area.

Send For Bulletin No 50. A complete treatise on the latest Soil-Cement processing methods.



Macadam

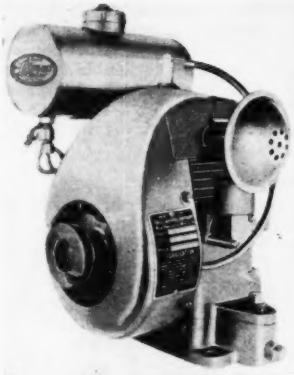
The stronger the base, the better the road. That is why more and more Macadam base roads are being built with Pulvi-Mixers which assure uniform depth and blend of the aggregate and prevent segregation and stratification of the materials.

The Seaman disperses the fines from top to bottom, filling the voids and assuring a more positive keying and locking of the aggregate. It also saves hundreds of manhours per mile by eliminating the slow, costly hand "brushing-in" of the fines. The Seaman leaves a thoroughly blended, homogenious texture ready for immediate compaction.

Send For Bulletin No. 60. An authoritative booklet on modern Macadam construction methods.

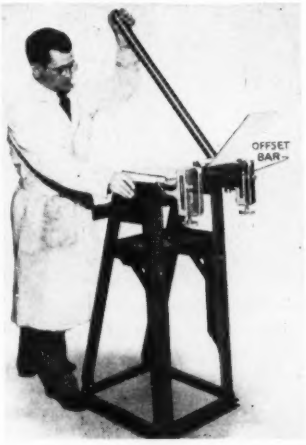
SEAMAN MOTORS, INC.

281 NORTH 25th MILWAUKEE, WISCONSIN



Lightweight Gasoline Engine

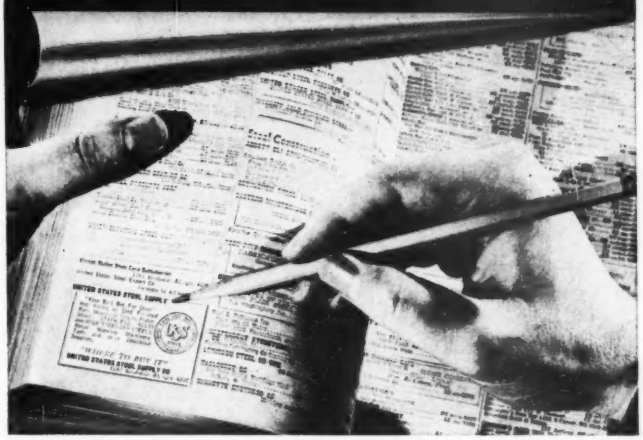
A new, lightweight gasoline engine, weighing only 23 lb., Model LMC, has been developed. It is particularly suited for powering portable equipment, and is also readily adaptable for use on pumps, compressors, sprayers, small generators and similar applications. Important features of this light weight engine include ball bearings on the crank-shaft, float feed, automotive-type carburetor, fly ball governor and high tension magneto. The engine has a bore of 1⅜ in. and a stroke of 1½ in., with a piston displacement of 3.11 cu.in.—LAUSON CO., NEW HOLSTEIN, WIS.



Bar Bender

On the job cold bends of copper, aluminum, brass and mild steel bar and strip through a complete range of sizes from ⅛ in. x 1 in. to ½ in. x 6 in. are possible with the recently developed Form-Bar Bender. It is portable, simple to operate and requires no special training to operate in making bends up, down, sideways and twists. Short offsets and "Z" bends

TRY US FIRST
—when you need High Strength Steels



During these days of short supplies, it pays you to "Try Us First" for High Strength Steels — "the steels that do more." For, when you use U·S·S COR-TEN or U·S·S MAN-TEN instead of carbon steel, your steel supply will go *one-third* farther!

The reason is simple: The higher physical properties of these high strength steels make it possible for you to use thinner sections to produce units that weigh one-fourth less; that are substantially stronger and more durable; that require one-fourth less steel per unit. So, in many cases, you can produce as much as one-third more units from every ton of steel used. And, since both U·S·S COR-TEN and U·S·S MAN-TEN, like plain carbon steel, can be readily fabricated—since one-fourth less steel is required per unit, with consequent reduction in shipping costs — since fixed charges can be spread over one-third more units, your finished product can be built at little or no increase in cost.

Our warehouses and sales offices, coast-to-coast, have U·S·S COR-TEN and U·S·S MAN-TEN steels in stock. Our other High Strength Steels—U·S·S ABRASION RESISTING and U·S·S MANGANESE-NICKEL-COPPER — are also stocked for your needs. Fill in and mail the coupon *NOW* for free booklets on U·S·S High Strength Steels.

SYMBOL OF SERVICE - FOR STEEL USERS

UNITED STATES STEEL SUPPLY COMPANY · USS · STEELS · SERVICE

United States Steel Supply Company
Dept. B-3-17, 208 S. La Salle St., Chicago 4, Ill.
Without obligation on our part, please send us free booklets on U·S·S High Strength Steels.

Name.....Title.....

Firm Name.....

Address.....

City.....Zone.....State.....

UNITED STATES STEEL SUPPLY COMPANY

USS

Warehouses: BALTIMORE · BOSTON · CHICAGO
CLEVELAND · LOS ANGELES · MILWAUKEE · MOLINE, ILL. · NEWARK · PITTSBURGH
PORTLAND, ORE. · SAN FRANCISCO · SEATTLE · ST. LOUIS · TWIN CITY (ST. PAUL)
Also Sales Offices at: KANSAS CITY · PHILADELPHIA · TOLEDO · TULSA · YOUNGSTOWN
Headquarters Offices: 208 S. La Salle St. — Chicago 4, Ill.

UNITED STATES STEEL

For those rough, tough power jobs

HERE'S A NEW, COMPACT WICO *heavy duty magneto*

No matter how many hours of continuous service you need . . . no matter how much dust or dampness . . . your engine will get the regular, hot spark it needs from this WICO Model XHD magneto. It's a *new* magneto, designed to do the hard work you need done. It's compact. The molded, insulated coil is stronger so there's less chance of breakdown. This solid plastic case is far tougher than a tape winding. A specially made bronze bushing and ball bearing, lubricated for life, insure trouble-free service. The large — 3/16" — tungsten contacts resist fouling and wear longer. Built-in impulse coupling. On flange-mounted models, a Buna-N oil seal prevents leakage. Available for 4 or 6 cylinder engines, flange or base mounted.

This *new* WICO Model XHD is the finest magneto available for engines operating in continuous service under the most adverse conditions that require ignition units of exceptional stamina and ruggedness.

If you've had ignition trouble, chances are this economical WICO XHD will change that. Ask your equipment dealer, or one of WICO's more than 2,000 authorized service stations. Wico Electric Company, West Springfield, Massachusetts.

SINCE 1897 WICO DEPENDABLE IGNITION

can also be made and a positive set-up for repeated "pre-fab" duplicate bending is included. A vertical mounting makes the tool flexible for handling the longest length of material on any kind of a job.—WINFIELD R. SCOTT, 234 SOUTH 11TH STREET, NEWARK, N. J.

Masonry Cutting

Continued research in the field of masonry cutting has developed new and highly efficient Clipper masonry saw models, incorporating such production speed-up features as the "Adjust-A-Cut" control for instantaneous one-man adjustment of the cutting head; "Streamlined" ball bearing conveyor cart—precision balanced and designed—with aluminum alloy castings and a new improved "Snap-on" blade guard cover. Three separate units—the cutting head assembly, the saw frame and conveyor cart (none weighing over 154 lb.) make Clipper saws easily portable from one operation to another.—CLIPPER MFG. CO., (EN 49), 2800 WARWICK, KANSAS CITY 8, MO.

Air Jet Muffler

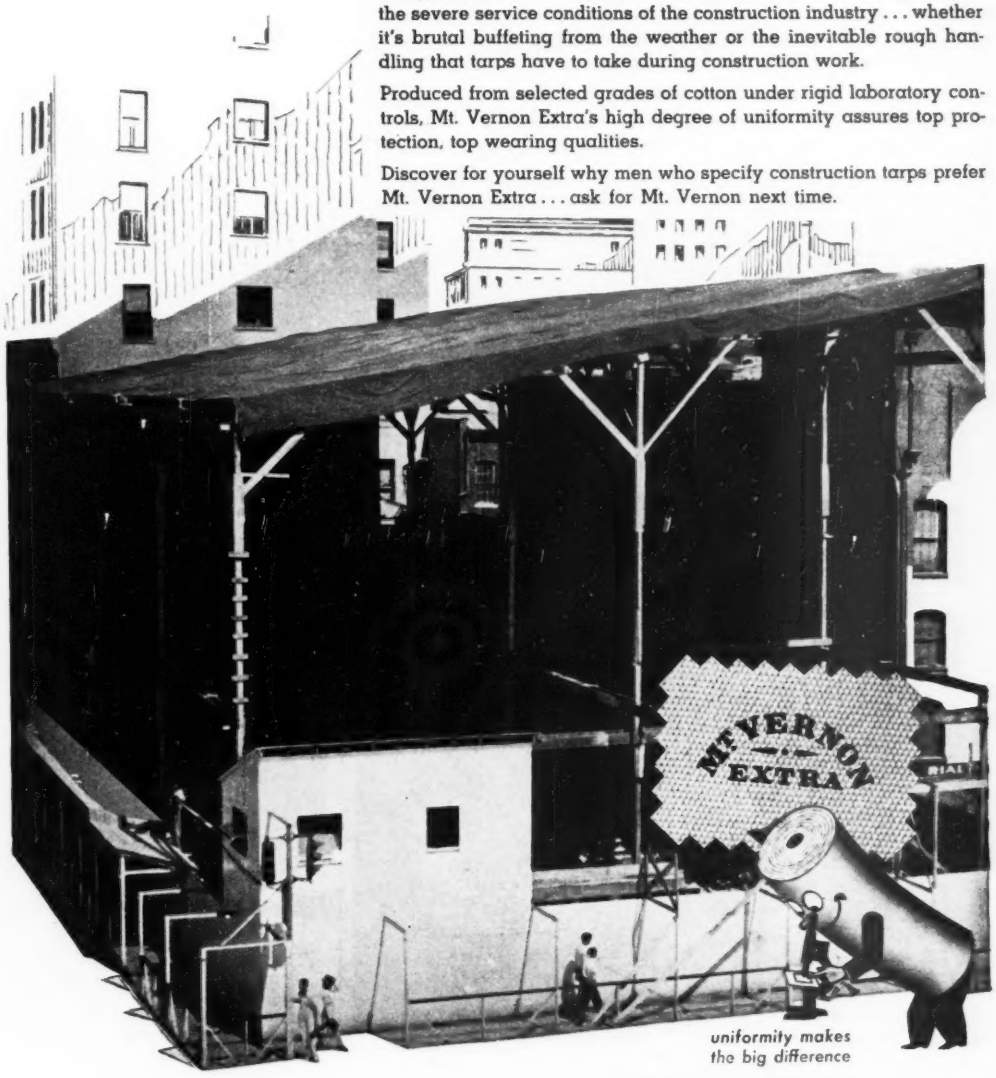
Savings in fuel consumption up to 15 percent are claimed for this heavy-duty muffler. The main purposes of this air jet muffler are to eliminate back pressure on the engine, reduce exhaust smoke and stop loud exhaust noises. It is slightly larger than ordinary types to accommodate a double-shell and orifice arrangement through which air is drawn, proportioned and introduced into the exhaust stream. Road tests showed cooler engine operation on long grades and reduced engine maintenance, the company claims. Sizes up to 175 hp. are available.—U. S. FLEXIBLE METALLIC TUBING CO., 63 MAIN ST., SAN FRANCISCO, CALIF.

A Roof that Can Rough It

Tarps made of Mt. Vernon Extra have what it takes to stand up to the severe service conditions of the construction industry . . . whether it's brutal buffeting from the weather or the inevitable rough handling that tarps have to take during construction work.

Produced from selected grades of cotton under rigid laboratory controls, Mt. Vernon Extra's high degree of uniformity assures top protection, top wearing qualities.

Discover for yourself why men who specify construction tarps prefer Mt. Vernon Extra . . . ask for Mt. Vernon next time.



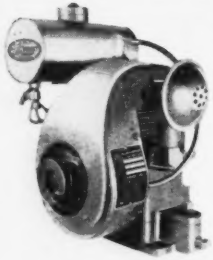
uniformity makes the big difference

Mt. Vernon-Woodberry Mills

TURNER HALSEY
COMPANY
Selling Agents
40 WORTH ST. • NEW YORK

Branch Offices: CHICAGO • ATLANTA • BALTIMORE • BOSTON • LOS ANGELES • AKRON

LAUSON POWER is DEPENDABLE Power!



- Lauson dependability gets the job done — provides plus power for pumping, vibrating and countless other construction jobs.
- Sizes from ¾ to 5 H. P. 4-Cycle, Air-Cooled.
- Light weight — instant starting — economical operation.
- Machined mounting pad on crank case for direct mounting of pumps, generators, etc.

NATION-WIDE LAUSON SERVICE AVAILABLE EVERYWHERE

Dept. ER, The LAUSON Company, New Holstein, Wis.

LAUSON

In Canada: Hart-Emerson Ltd. Winnipeg, Canada

ENGINEERS FOR OVER 50 YEARS!

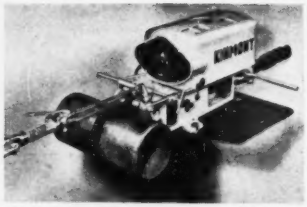
Cut Cost of Modern Buildings with SMOOTH CEILINGS SYSTEM •

● THE SMOOTH CEILINGS SYSTEM ideally lends itself to cantilever balcony construction so typical of modern buildings. The special steel grillages may be used with reinforced concrete, structural steel, or steel pipe columns, and are especially adapted to flat slab construction. Reduces cost of form work and cost of installing mechanical equipment. Saves space by eliminating beams and column capitals.

WRITE TODAY FOR FURTHER INFORMATION

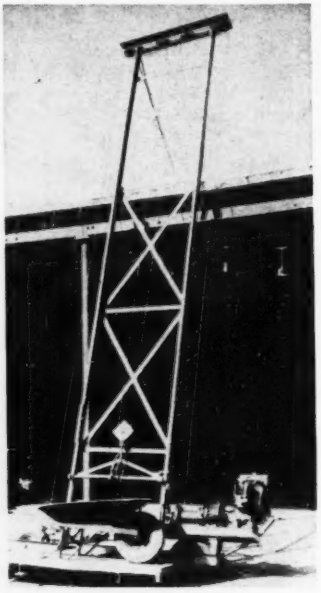
SMOOTH CEILINGS SYSTEM CO.

802 Metropolitan Life Bldg. Dept. A Minneapolis, Minn.



Cutting Torch Attachment

A new attachment for the Kinmont Universal Power Unit is now available. It provides for fast adjustment of the cutting torch in handling a wide range of pipe sizes; the maintenance of a smooth bevel; and making a square cutoff across the end of the pipe. It can be used on any pipe size from 3 in. to 36 in. dia., and on tanks up to 10 ft. dia. when turned on a roller rack.—KINMONT MFG. CO., INC., W. WILSON AVE., GLENDALE 3, CALIF.



Ladders on Wheels

Power for these versatile units is provided by compact, rugged electric or gasoline engine-driven installations that assure consistent, efficient operation under the most rigorous conditions. Remote control attachments permit these CMC Roll-o-Hoists to be operated from any level. Also, automatic stops make it possible to load or unload at intermediate level at intermediate levels. A safety device controlled by the counter-balanced weight of the platform stops a full load within

(Continued on page 219)

"Because I figured competition's bound to get tougher. I wanted a shovel that could cover lots of ground and make better money on all kinds of jobs. Take it from *me*, if you want to get the most for your money, get a MICHIGAN!

"IT'S FAST ON THE ROAD—
Gets to the job as fast as a truck, and under its own power.

"IT MOVES DIRT FAST—
Anyway you look at it, it's *yard*-age that counts. MICHIGAN'S 5.4 RPM swing and fast air clutches give you the extra yards a day you're after.

"IT'S *REALLY* BUILT—
Any time you put a shovel on a truck you need a chassis that's designed for the job. And MICHIGAN *knows how*—they've built their own chassis for years.

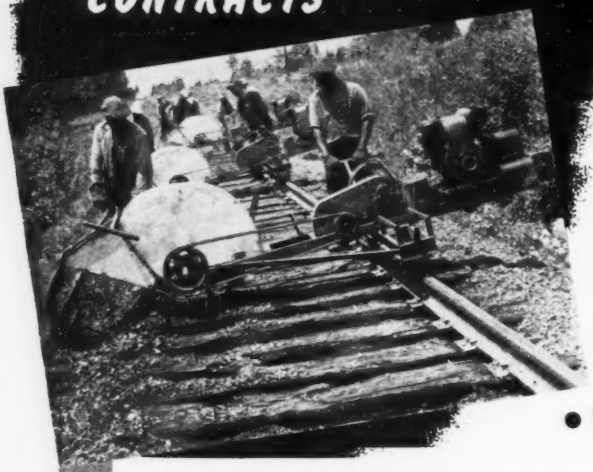
"IT'S EASY TO HANDLE—
You know that if a machine is rough on the operator he'll probably be rough on the machine. MICHIGAN'S air ram clutches are fast and easy. They take the work out of operating. That's why my operators like to run the MICHIGAN."

See MICHIGAN Truck Shovels at work on jobs like yours — write for Bulletin 100, "On The Job with MICHIGAN."

MICHIGAN

MICHIGAN POWER SHOVEL COMPANY, 500 Second Street, Benton Harbor, Michigan, U. S. A.

PUT NATIONALLY-KNOWN *Experts* TO WORK ON YOUR *Trackwork* CONTRACTS



- **RELAYING**
- **REHABILITATION**
- **ABANDONMENTS**
- **TRACK STRIPPING**
- **BALLAST CLEANING**
- **TRACK CONSTRUCTION**

On original projects or subcontracts . . . a few feet or a hundred miles, where there is railroad trackwork to be done, it is a job for Royce Kershaw Co., Inc.

Twenty-five years of specialized experience on contract trackwork throughout the United States and Central America provides a solid background of skill and financial responsibility to handle contracts of any size and to produce top quality completed work—on schedule.

Use of Kershaw Trackwork Equipment and modern engineering and time study methods cut overall costs to such an extent that a number of major railroads find trackwork by Kershaw more economical than using their own crews!

If you have trackwork coming up this year . . . or next . . . get complete information from Kershaw now.

ROYCE KERSHAW CO., INC.

RAILROAD CONTRACTORS

P. O. BOX 510 **MONTGOMERY, ALABAMA**

Twenty-five years of "working on the railroads"
From 900 foot spurs to 80 miles of main line.

K

stand 5,000 lb. eliminates the danger of breakage due to overloading. Modifications such as front loading platforms and tip-over buckets have been incorporated to expedite production and lower operating costs. Available in four different models varying in lifting capacities.—CONSTRUCTION MACHINERY SALES CO., WATERLOO, IA.

Mobile Crane

Model 8502, illustrated, is a 7½-ton crane powered by a Ford V-8, 47 hp. gasoline engine. It has a turning cycle of 40 ft. and will travel at 2 mph. loaded and 4 mph. unloaded on level ground. Motions are hoisting, swinging, derricking and traveling—each operated by separate single motors, all of which can be operated simultaneously. Unobstructed view from the cab. Clamshell buckets, magnets, demolition balls, etc., are available for any materials handling job, and dealers will be stocked with spare parts.—COLES CRANES, INC., 4301 SOUTH PAULINA ST., CHICAGO 9, ILL.

Machinery Hauling Trailer

This trailer is built for rugged duty. The tilt top platform makes for easy loading—no jacks, cribbing or skids required. One-man operation. Model B, illustrated, is of 10-ton capacity. It comes completely assembled with platform, side angles, stake pockets, dual wheels, pintle eye hook, and 4 tires 8.25 x 15 x 14 ply.—RAY MILLER RESEARCH ENGINEERS, 4320 W. MARTIN DRIVE, MILWAUKEE 8, WIS.

Building Paper

A new development in building paper is a roll 10 ft. wide, 100 ft. long, and weighing 60 lb. Made out of an unbroken sheet 10 ft. wide, the "Skufpruf Ten" eliminates the ex-

DIGS

CARRIES

SPREADS

DUMPS

Move more dirt per trip . . . make more trips per hour with fast loading, fast dumping BE-GE "Speedhauls"! Engineered by practical earth moving men and constructed to achieve maximum "on the job" efficiency . . . these fully hydraulic scrapers are designed to operate profitably in all materials.

Self-loading, full carry BE-GE "Speedhauls" have *controllable* cut and spread. Tractor operator with a clear view of the blade instantly regulates the CUT, LIFT, SPREAD, and DUMP operations of the Speedhaul with finger-tip hydraulic controls. Fast, clean dumping or spreading is accomplished by forced "roll-out" ejection . . . uniform depth of cut in *all materials* by positive hydraulic down pressure on the blade.

TOP PHOTO: ST Model Speedhauls for crawler tractors available in 3, 4.5, 6, 8, 10 and 14 yard capacities. **LOWER PHOTO:** SS Model Speedhauls for industrial wheel tractors available in capacities of 3, 4.5 and 5 cubic yards.

See your nearest Tractor dealer for full details or write Dept. ENR.

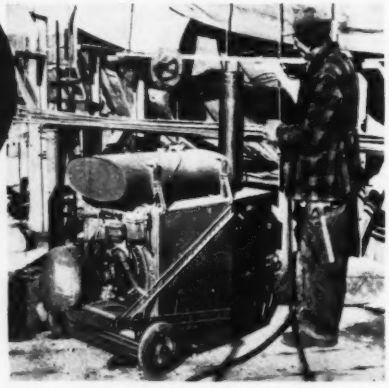
BE-GE MANUFACTURING CO.
GILROY, CALIF. CHATTANOOGA, TENN.

pense of lapping narrow rolls together. Other features are its light weight, ease in handling and storage. A piece easily cut off the roll makes a strong, waterproof, scuffproof, shrink-resistant tarp. The roll covers 40% more area in the same operation than a 7-ft. wide roll.—THE RICHKRAFT CO., BUILDERS BLDG., CHICAGO.

Packaged Pipe Line

A "packaged" light weight pipe line for temporary or semi-permanent installations of water, gas, or air lines has been announced as available for sale or rental. The "Speed-lay Pipe System" consists of three parts: Pipe, featuring light weight, uniform lengths, and easy makeup; fittings to meet any requirement; and valves easily assembled on the line. The pipe is used for pressures up to 150 psi. and is furnished in sizes from 2 to 6 in. and in lengths of 20 ft., easily handled by one man. Ends of pipe are prepared for victaulic couplings, one to each length of pipe. A few turns of the wrench and the coupling is made up. Outside screw and yoke or non-rising stem gate valves in either flange or screw type may be specified. Users save in material, transportation, handling and labor costs.—ALBERT PIPE SUPPLY CO., INC., BERRY AND NO. 13TH STS., BROOKLYN 11, N. Y.

HEAT



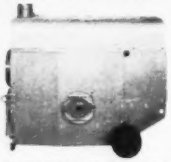
WHERE YOU WANT IT---
WHEN YOU WANT IT---
without waste

THE ORIGINAL HERMAN NELSON GASOLINE-BURNING PORTABLE HEATER

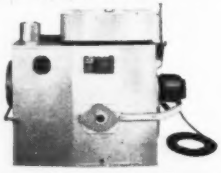
- **Provides Quick, Clean, Safe Heat—*without* soot, fumes or open flame!**
- **Abundant *fresh*, heated air — *forced* to areas where most needed!**

These time-tested, job-proved Portable Heaters step up winter production by eliminating delays caused by cold weather. Can be used for countless applications requiring temporary or emergency heat. Especially suited to jobs requiring a self-contained, self-powered heating unit. Full 250,000 BTU per hour capacity — enough to heat three ordinary five-room houses — yet no bigger than a kitchen stove!

Also Available



New Herman Nelson De Luxe Model Portable Heater—Oil Burning—Electric Motor Powered—Automatic Ignition—250,000 BTU per hour.



New Herman Nelson Economy Model Portable Heater—Oil Burning—Electric Motor Powered—Low First Cost — 125,000 BTU per hour.

Write for Interesting Free Booklet on "COST CONTROL"

THE HERMAN NELSON CORPORATION MOLINE ILLINOIS

SINCE 1906 MANUFACTURERS OF QUALITY HEATING AND VENTILATING PRODUCTS

When you need specific information on materials, equipment or services, reach for your Sweet's File, Engineering (the big blue file). It contains 330 manufacturers' catalogs full of useful information on thousands of products . . . from absorbers—gas, to zinc galvanizing. Cross indexing speeds finding.

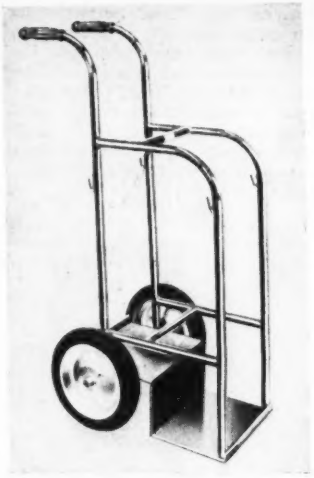
If Sweet's File, Engineering, is not available in your office, make request immediately for application form. Files are distributed FREE to qualified organizations and individuals.

Sweet's

CATALOG SERVICE

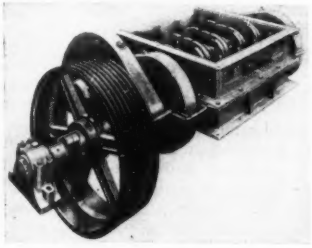
for easier, faster selection of products

119 W. 40th ST., NEW YORK 18, N. Y.



Welding Cylinder Trucks

Trucks to carry any size welding cylinder in tandem or side by side, are included in this line. Trucks are available with close fitting welded wide spoke steel wheels or with the finest ball bearing, rubber tired, industrial wheels.—ADAMS MFG. & SUPPLY CO., 1522 N. INDIANA ST., LOS ANGELES 33, CALIF.



Preliminary Crusher

The Eagle double roll preliminary crusher has been redesigned for reducing hard fire clay, flint clay, shale and other material. The basic principles of a combined hammer mill operating at comparatively slow speed and a cutter and crusher have been retained to provide trouble-free, high output preliminary reduction of the toughest materials.—EAGLE IRON WORKS, 129 HOLCOMB AVE., DES MOINES, IOWA.

Weed Killer

Arsenical weed killers (TRIOX) are highly toxic to vegetation and retain weed-killing power in the soil for a long time. They can be applied any time of the year, although best results are obtained at the beginning of the rainy season when weeds are starting. One application at that time poisons the soil, killing weed seeds and usually

Introducing...

JOE RAMSETTER!

If you don't know JOE RAMSETTER, you're missing a profit-maker. Joe carries the sharpest pencil you ever saw, for cutting costs and saving time on fastening jobs in steel, concrete, brick, other hard materials. It's the RAMSET FASTENING SYSTEM.

No chipping! No drilling! No plugging! Not for Joe! In 30 seconds, he prepares the tool, then places it against the work, taps it—and RAM! It instantly sets pins and threaded studs up to 6" long and 5/8" diameter. It's fast, it's tight, it's as economical as reading a newspaper over a neighbor's shoulder.

Five pounds of RAMSET TOOL do the trick. Self-contained, completely portable. Easy to use. In 30 minutes, we teach any good, careful workman to RAMSET up to 50 fastenings per hour.

RAMSET SYSTEM saves so much time and money you won't believe it until you see it. Better send for Joe to demonstrate on your own jobs. Just mail the coupon.

Ramset FASTENING SYSTEM

Stemco Corporation, Cleveland 16 (Rocky River), Ohio.

MAIL THIS COUPON

Stemco Corporation,
Cleveland 16 (Rocky River), Ohio
Please have JOE RAMSETTER show us how to save time and costs on fastening jobs.

Name_____

Company_____

Address_____

ECK MILLER OF OWENSBORO, KENTUCKY
DOES IT WITH A ROGERS
using a Rogers Model D-35-D and a Pole Type Trailer loaded with 80,000 lbs. of steel tank 67 feet in length. The conventional trailer mounts a fifth-wheel type of bolster which supports the front of the load and tows the pole trailer which carries the rear of the load.
A. B. BURTON CO., Inc. OF LYNCHBURGH, VA.
DOES IT WITH A ROGERS
Moving this heavy Northwest power shovel from job to job presents no problem to the A. B. Burton Co. when they have their D-50-D Rogers semi-trailer to rely upon.
DUIE PYLE OF COATSVILLE, PA.
DOES IT WITH A ROGERS
Another 40 tons of tank 70 feet in length is rapidly transported the 70 mile distance from Lancaster, Pa., to Telford, Pa., with a Rogers popular D-35-D semi-trailer and a PT-15 pole trailer taking the job "in stride".
and YOU CAN DO IT WITH A ROGERS trailer, whether the jobs involved require the hauling of light, medium or heavy equipment. Why not learn in detail just what Rogers has to offer. Write TODAY for your copy of the NEW CATALOG.
ROGERS BROS. CORP.
DESIGNERS and BUILDERS OF HEAVY DUTY TRAILERS SINCE 1915
EXPERIENCE builds 'em
PERFORMANCE sells 'em
135 ORCHARD ST. ALBION, PENNA.

giving reliable weed control for more than one year. "Spot" treatments can be made seasonally or annually to prolong weed control indefinitely. For an economical and thorough job, low pressure (100 to 150-lb.) power equipment is recommended, though sprinkling carts may be used or, for small areas, a sprinkling can.—California Spray-Chemical Corp., Richmond, Calif.

Hydrostatic Impulse Gage

Mechanical, self-recording gage may be lowered into a well or connected to a pressure chamber to measure directly the total impulse per unit area generated by pressure waves resulting from underground explosions or other high pressure sources. The hydrostatic impulse forces mercury through a capillary passage and into a collector; weight of mercury discharged is proportional to the impulse per unit area in psi-sec, from 10 to 400 psi. The gage is entirely self-contained and of simple construction, for convenience in field use. Its applications include geophysics, blast damage determination, and water hammer research.—Engineering Research Associates, Inc., St. Paul 4, Minn.

Motor Starter

A new magnetic motor starter and magnetic contactor to give maximum protection to alternating current motors up to 50 hp., 440 V, has been placed on the market. It is claimed that it will provide longer contact life, greater protection and quiet operation. Two outstanding features are the relay

NOW!

- GENERAL CONTRACTORS
- ROAD CONTRACTORS
- TUNNEL CONTRACTORS
- MINES

You can *RENT* for your temporary use or . . . *PURCHASE* for your permanent use . .

Want to Save Money?

ALBERT PIPE SUPPLY CO., INC.
Berry and North 13th Street, Brooklyn 11, N. Y.

Please send free booklet describing your Speed-Lay Pipe System and services:

NAME .....

FIRM NAME .....

ADDRESS .....

CITY ..... STATE .....

a complete factory-packaged . . .

SPEED-LAY PIPE SYSTEM

Pipe Already Prepared + Couplings and Fittings Famous Victaulic Line + Valves and Accessories As Required = PACKAGED "SPEED-LAY" PIPE SYSTEM

Complete and Ready to go FOR . . .

SIMPLE • FAST • IMMEDIATE INSTALLATION

Light weight a feature

FOR SAVINGS IN LABOR AND TRANSPORTATION

FOR MORE INFORMATION USE COUPON OR PHONE— **IMMEDIATE DELIVERY**

ALBERT PIPE SUPPLY COMPANY, Inc.

PHONE: EVergreen 7-8100 Berry and North 13th Street Brooklyn 11, New York CABLE: PIPESUPPLY

MASTER COST-SAVING EQUIPMENT—FOR IMMEDIATE DELIVERY

Gas or Electric Concrete Vibrators (Catalog No. 689)

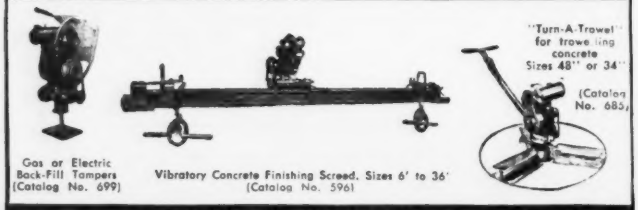
Hand Tools for operating from all Master Vibrators and BIG-3 (Catalog No. 683)

BIG-3 for Generation, Tool Operation and Concrete Vibration (Catalog No. 687)

Portable Gas-Electric Generator Plants. Sizes 500 to 17000 Watts (Catalog No. 594)

General Purpose Floodlights

"Power-Blow" Electric Hammer and Spade (Catalog No. 688)



Gas or Electric Back-Fill Tampers (Catalog No. 699)

Vibratory Concrete Finishing Screed. Sizes 6' to 36' (Catalog No. 596)

"Turn-A-Trowel" for troweling concrete Sizes 48" or 34" (Catalog No. 685)

Send for illustrated catalog on any item to

MASTER VIBRATOR COMPANY

DAYTON 1, OHIO

MEN Who Know Equipment SPECIFY
PLYMOUTH Locomotives

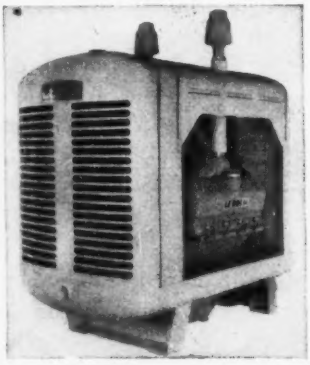
Over a period of many years, under all kinds of operating conditions, PLYMOUTH Locomotives have established proved records of dependable performance. Economical to use and economical to maintain, PLYMOUTH Locomotives are built well—and built right—by careful engineering planned to meet exacting requirements in the construction field. We feel sure there's a PLYMOUTH Locomotive to meet your particular needs. Write for complete details today.

FOR COMPLETE DETAILS WRITE TODAY

PLYMOUTH LOCOMOTIVE WORKS

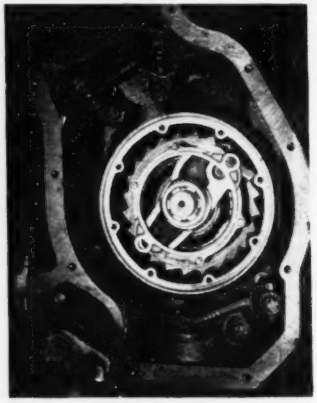
DEPT. A-4 PLYMOUTH, OHIO

heaters and the plastic-encased coil.—THE TRUMBULL ELECTRIC MFG. CO., PLAINVILLE, CONN.



New V-8 Engine

Valve-in-head unit rated up to 135 hp. runs on gasoline, butane, or natural gas. Compact, easily accessible, and light in weight. Has aluminum pistons and push-button electric starting.—LE ROI CO., 1706 S. 68TH ST., MILWAUKEE 14, WIS.

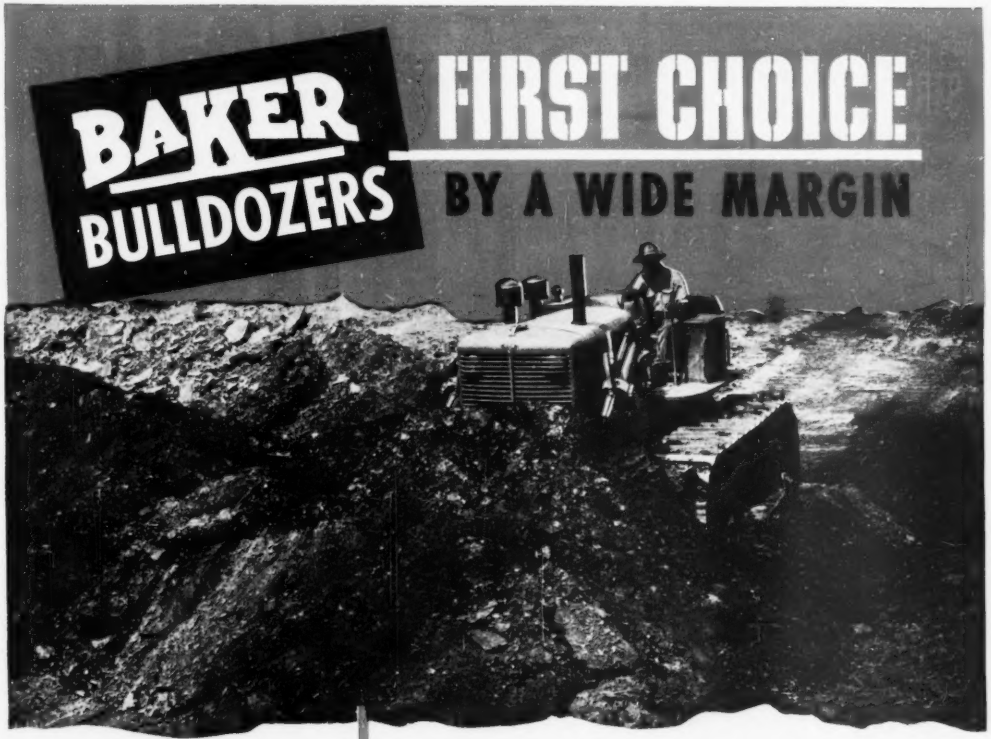


Automatic Brake

An automatic brake is now available as optional equipment for the Hyster D6N Towing Winch. The brake lever is set before winching so that when the drum stops winding, the brake automatically engages, thereby holding the load in place. Since the single pawl or dog carried by the revolving arm, is retractable, it does not click against the ratchet teeth in the rim.—HYSTER CO., PORTLAND, ORE.

Aluminum Soil Pipe

As there is said to be a shortage in soil pipe and fittings, it is of interest that this manufacturer of aluminum soil pipe offers immediate delivery. It is especially recommended for all above-ground plumbing installations.



A Few Recent Purchasers of One or More Baker Dozers and A-C HD-19 Tractors

O'DELL-RINEY CONST. CO.
Contractor — Hannibal, Mo.

OOLITE ROCK CO.
Quarry — Miami, Fla.

S. A. HEALY CO.
Contractor — White Plains, N. Y.

CONSUMERS POWER CO.
Utility — Jackson, Mich.

MAUMEE COLLIERIES
Coal Mine — Terre Haute, Ind.

SUNLIGHT COAL CO.
Coal Mining — Boonville, Ind.

DAYTON POWER & LIGHT CO.
Utility — Dayton, Ohio

WYANDOTTE CHEMICALS CORP.
Quarry — Alpena, Mich.

LONE STAR CEMENT CO.
Cement — Bonner Springs, Kan.

CHILE EXPLORATION CO.
Mining — New York, N. Y.

SMITH CONTRACTING CORP.
Contractor — Ft. Worth, Texas

ROBINSON CLAY PROD. CO.
Quarry — Akron, Ohio

HYDRO-ELECTRIC POWER COM'N.
Utility — Toronto, Can.

CANADIAN INTERNATIONAL PAPER CO.
Logging — Montreal, Can.

OLIVER IRON MINING CO.
Mining — Duluth, Minn.

The Baker Bulldozer and HD-19 Allis-Chalmers tractor combination has really rocked the industry — amazed even the most experienced earth-movers with its power, traction and speed — with its ability to move more yardage than any unit in its class.

The Baker Hydraulic Bulldozer is perfectly matched in operating speed, balance and weight . . . important factors in getting the most out of the tractor. Its simplicity of design and operation mean faster bulldozing with less operator fatigue plus longer, trouble-free service.

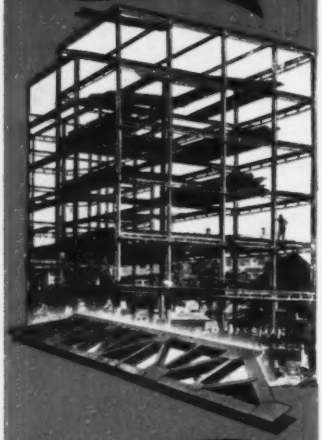
Now, with buying again becoming selective, it is significant that from coast to coast — among contractors, quarries, mines, utilities and loggers — among experienced earth-movers who've tried them all, it's Baker Bulldozers by a wide margin. Before you buy any bulldozer, check with your Baker - Allis-Chalmers dealer.

BUY THE BEST . . . BUY BAKER

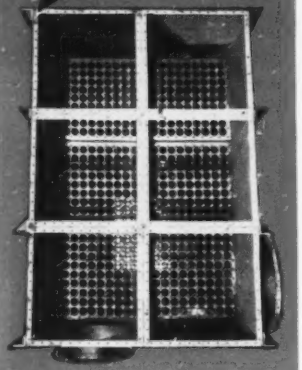
BAKER

SPRINGFIELD • ILLINOIS

STRUCTURAL STEEL FABRICATION



SPECIAL FABRICATION



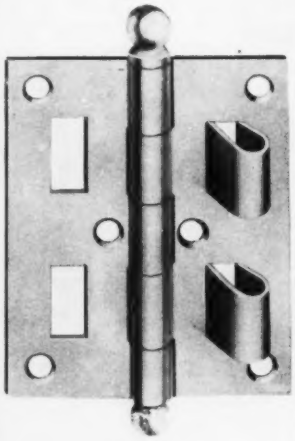
We are prepared to furnish any type of fabrication in any metal to your particular specifications. Write . . .

The LEVINSON STEEL COMPANY

31 PRIDE ST. • PITTSBURGH, PA.

LS-2

It is also used for venting, drainage, and sewage disposal systems.—General Aluminum Supply Corp., Rialto Bldg., Kansas City 6, Mo.



Self-latching Hinge

A device that adds to any conventional butt-hinge the function of a latch spring, has been introduced. It is not only self-latching, but is also self-aligning. Both leaves of the hinge are slotted to permit the insertion of a "cam"-like design of a "U" shaped, tempered spring. One end of the spring is anchored in the door jamb. The other end, the curved, or "cam" side, compresses into the hinge slot. The spring then releases and latches by the manual closing of the door. It is installed like any other butt-hinge, except that a mortise, the depth of the spring insert, must be provided. No other separate latch, catch, or hook need be put on. With the addition of a knob or handle, the hanging of the entire door is complete.—Latchinge Corp., 9100 Roselawn Ave., Detroit 4, Mich.

Power Wheelbarrow

The Moto-Bug can be equipped with an optional 4-ft. stake platform body that is easily interchanged with the 10-cu. ft. capacity. There is a hopper body; an optional riding step for the operator, and a dual wheel has been placed on the direct steering mechanism. Better all-around performance is claimed as a result of these changes. Adding the flatbed platform gives the machine a 1,200-lb. capacity for truck handling loose loads, skids and bins. Also, the platform body may be tilted for unloading certain kinds of heavy material.—Kwik-Mix Co., Port Washington, Wis.

RUD-O-MATIC TAGLINE

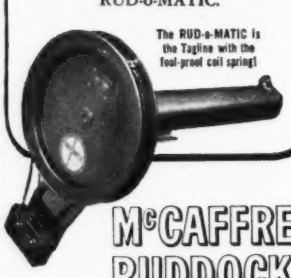
Provides positive, steady tension — holds buckets steady under all working conditions.

Spring tension holds buckets steady. No weights, pins, tracks, or carriages. Cable saving more than pays for RUD-o-MATIC. Compact—easily installed. Eight models to fit all bucket sizes.

RUD-o-MATIC Taglines are used as standard equipment by most crane manufacturers. Spring tension is powerful enough to hold a clam shell bucket steady. Operates with boom at any angle. Compact – it can be installed in less than thirty minutes. No pins, weights, tracks, or carriages to wear or be replaced. Taglines are complete with fairlead U bolt clamping plates, and cable attached. Immediate delivery – see your equipment dealer – or write –

• *Dealers—selected territories in Midwest and Northwest are still open. Write for all details.*

RUD-o-MATIC combination Magnet Reel and Tagline . . . operates on spring tension principle with tagline attached to magnet to steady – and electric cable fastened to magnet connections with all slack needed to prevent cable from being pulled or jerked loose from connections. Exclusive with RUD-o-MATIC.



McCAFFREY RUDDOCK Tagline Corporation

2131 East 25th St., Los Angeles 11, Calif.

MILES AHEAD IN FAST LOW-COST HIGHWAY MAINTENANCE!

ALL the features you want and need are yours in the FWD Model HG Maintainer.

- Five-forward-speed transmission to give you the speed ranges required for road maintaining operations.
- Hydraulically controlled under-body blade that cuts material off the high spots and rolls it into the low spots. Blades and grades faster.
- Greater under-body clearance — no need to remove blade, just move it up out of position — and you are on your way at road speeds up to 40 miles per hour.
- The comfort and convenience of a modern driver's cab makes the FWD "HG" an all-weather, all-season unit of equipment.

You can go to and from the job faster — maintain more miles of road per day — cut maintenance costs up to 30% to 50%. The FWD "HG" is the Maintainer for many jobs — equipment that has no idle season.

For complete information see your nearest FWD distributor.

THE FOUR WHEEL DRIVE AUTO CO.
CLINTONVILLE, WISCONSIN
Canadian Factory: KITCHENER, ONTARIO

FWD

America's Foremost Heavy-Duty Truck

CORROSION-PROOF

resists acid fumes, smoke, gases, alkalies, heat, cold, moisture, etc.

Industry needs all the roofing protection it can get—and Plasteel has what it takes. Plasteel's consistent performance in industry's tough assignments lies in its built-in strength. Designed by industry, for industry, Plasteel is steel roofing—triple-protected—to withstand the extremes of exposure. Plasteel will not rust—nor corrode. It needs no paint—no repairs. It's permanent! That's why thousands of industries now protect with Plasteel.

Let us help you with your roofing and siding problems. For Complete Details Mail Coupon

A PARTIAL LIST OF INDUSTRIAL USERS OF PLASTEEL

American Steel Foundries
American Steel & Wire
Blaw-Knox Company
Copperweld Steel Company
Dravo Corporation
H. J. Heinz Company
Hygrade Food Products Corp.
International Harvester Co.
Jessop Steel Company
Libby, McNeil & Libby
Molybdenum Corp. of America
Pacific American Fisheries
Richmond Radiator Company
Westinghouse Air Brake Co.

PLASTEEL PRODUCTS CO. ENR-7
Washington, Pennsylvania

☐ Send New Plasteel Handbook
☐ Samples of Plasteel Roofing

NAME .....
TITLE .....
COMPANY .....
ADDRESS .....

(Pin Coupon to your Letterhead)

PLASTEEL PRODUCTS CO.
WASHINGTON, PA.
Offices in principal cities

Manufacturers' Publications

Steel Rolling Scaffolds – Circular says Tube-Lox rolling scaffolds are simple in design and have only four basic parts. They may be erected for any type of overhead work, 6 ft. up to 60 ft. or higher. They are designed for maximum safety, mounted on free-rolling casters, they may be rolled as the job progresses, while brakes on the casters hold the scaffold firmly in place during work. — THE PATENT SCAFFOLDING CO. INC., 3821 TWELFTH ST., LONG ISLAND CITY, N. Y.

Hoisting Equipment – A handy pocket-size catalog describes gasoline, electric, belt and steam hoists, car pullers, timber derricks, steel derricks, deck machinery, whirleys, hand power, builders' towers, rollers and logging machinery. — CLYDE IRON WORKS, INC., DULUTH 1, MINN.

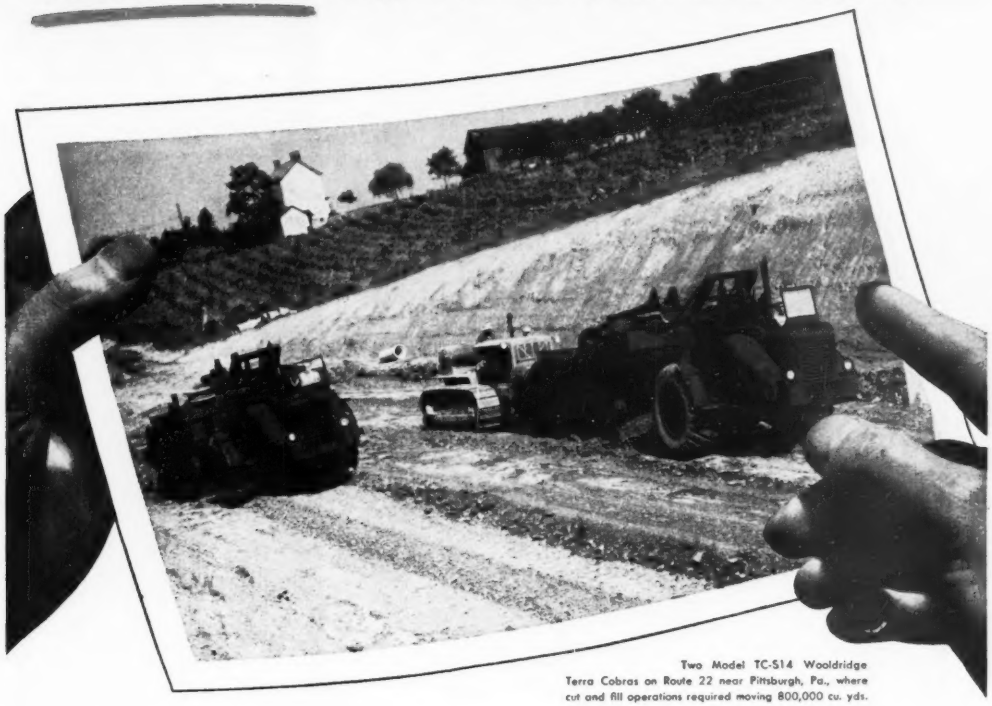
Switchboardless Generators – A 2-page catalog tells about the Katolight "AC" generator, 175 kw; 60 cycles, 3 phase, 900 rpm. eight pole, 480/830/-960/1660 volt, with overhead belted exciter, complete with panel including automatic voltage regulator, voltmeter, ammeter, and exciter field rheostat. Generators of these capacities usually require a separate switchboard. The engineers have attempted to so arrange these machines that in many cases a separate switchboard is not necessary. The automatic voltage regulator and the necessary meters are enclosed in a separate cabinet mounted on top of the outlet cabinet, and the sensitive meters and regulators are isolated from mechanical vibration by special rubber vibration dampers.—KATO ENGINEERING CO., MANKATO, MINN.

Lighting Equipment–A pocket-size catalog contains full information about fluorescent and incandescent lighting equipment. Among new products is a recessed troffer with a jackknife hinge that lowers lamps, starters, louvres and reflectors for easy cleaning and servicing.—EDWIN F. GUTH CO., 2615 WASHINGTON AVE., ST. LOUIS 3, MO.

Short Circuit Protection–Vol. I, No. 23 of the Accelerator, describes EC&M Valimitor motor starters suitable for use with 2300-4600 motors on a power circuit of any capacity.—THE ELECTRIC CONTROLLER & MFG. CO., CLEVELAND 4, OHIO.

(Continued on page 230)

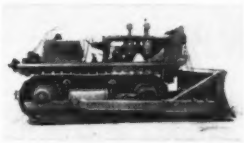
TERRA COBRAS PAY OFF ON 4500-FOOT HAUL!



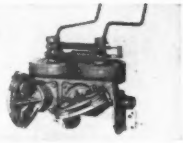
Two Model TC-S14 Wooldridge Terra Cobras on Route 22 near Pittsburgh, Pa., where cut and fill operations required moving 800,000 cu. yds.

SCRAPERS: Bolling Bowl and Terra Clipper Scrapers from 7.5 to 27.5 cu. yd. heaped capacities.

RIPPERS: Three models: for extra heavy, standard, or light duty.



BULLDOZERS and Trailbuilders for all standard makes of tractors.



POWER CONTROL UNITS: Two-drum winches for use with all standard tractors.

On long or short hauls, Terra Cobra's quick loading, high haul speeds, and fast spreading or dumping pay off in higher profits. These powerful 200 hp Wooldridge self-propelled earthmovers have proved their ability to handle greater yardage at lower cost per yard. "Easy on the operator," states the shift boss. That means more profit, too, with less slow-downs from operator fatigue. Due to positive two-wheel steering, powerful rear-wheel brakes, and many other proved Wooldridge features, higher speed operation is maintained throughout each shift with maximum safety.

Before you figure that next job, contact your nearest Wooldridge Distributor for complete details on the Terra Cobra. Prompt delivery is assured by placing your orders early.

WOOLDRIDGE MANUFACTURING CO.
Sunnyvale, California, U.S.A.

EARTH-MOVING EQUIPMENT

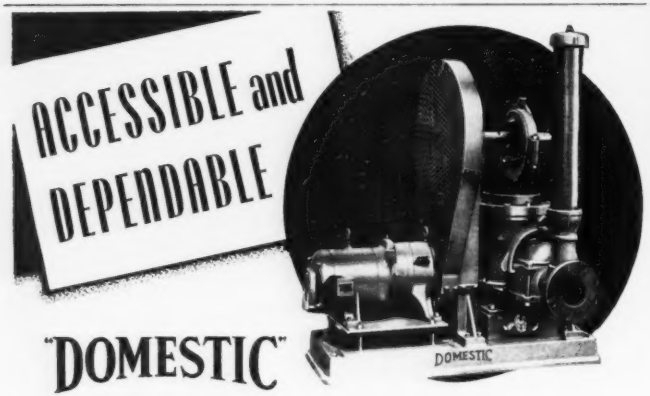
WOOLDRIDGE

PROVED AND APPROVED FOR EVERY TYPE OF EARTH-MOVING JOB

Self-loading Dirtmover — Information on the new D Roadster Tournapull, one-man operated, self-loading dirtmover, is contained in a broadside which carries specifications on this new 9-ton tool, and lists and illustrates features which make it profitable on a wide variety of jobs. These include its positive-ejection scraper, travel speeds up to 25 m.p.h., all-weather torque-proportioning differential, 2-speed positive power steer, electric control and 4-wheel air brakes. — R. G. LeTourneau, Inc., Peoria, Ill.

Truck Size and Weight Restrictions —In compiling the 1949 edition of "Truck and Trailer Size and Weight Restrictions," the publishers got state officials to check and approve the statements concerning the laws now in force in their respective states. The booklet covers the laws of every state, devoting one page to each width, height, length of single unit, tractor semi-trailer and other combinations, minimum axle spacing, weight restrictions per axle or per wheel are given, together with special laws governing sizes and weight of truck and truck-trailer combinations. — The Four Wheel Drive Auto Co., Clintonville, Wis.

Expansion Joint Remover—A circular tells about the Willits rotary ex-



"DOMESTIC"
Plunger
SLUDGE PUMP

DESIGNED AND BUILT FOR THE EFFICIENT PUMPING OF PRIMARY SEWAGE SLUDGE

Our 44 years of engineering and manufacturing experience assure superior construction and service.

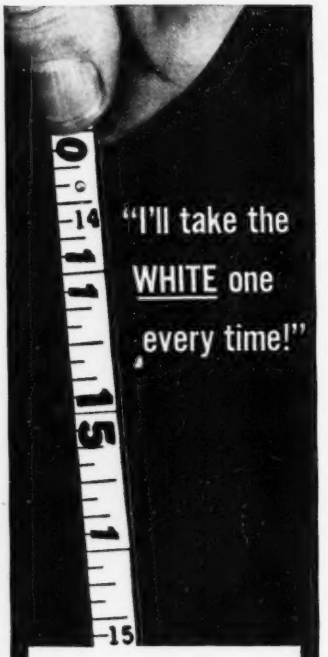
DOMESTIC plunger sludge pumps are today performing herculean tasks in every state in the Union, many after decades of gruelling use.

Types available: 6"—8½"—10"—and 12¼" in single, duplex and triplex types. Capacities from 35 gpm to 375 gpm at heads up to 115 ft. All sizes 5½" stroke, adjustable eccentric type. Furnished with gear head motor and roller chain drive or constant speed motor and V belt drive.

For complete details or literature write to Dept. E.

"If it's a Job for a Pump—it's a Job for Domestic"

DOMESTIC ENGINE & PUMP COMPANY
A Division of Empire Industries, Inc.
SHIPPENSBURG • PENNSYLVANIA



WYTEFACE "A"
TRADE MARK
STEEL MEASURING TAPES

The man who knows and uses measuring tapes instantly recognizes the superiority of WYTEFACE "A" Steel Tapes. Raised black graduations and rims, on a crack-proof white surface, make these steel tapes as easy to read in the brightest glare as in the dimmest light. See WYTEFACE "A" heavy duty and general purpose steel tapes at your dealer's, or write for catalogue.

WYTEFACE Steel Tapes and Tape Rules are protected by U. S. Patent 2,069,209.

KEUFFEL & ESSER CO.
EST. 1867
NEW YORK • HOBOKEN, N. J.
CHICAGO • DETROIT • ST. LOUIS
SAN FRANCISCO • LOS ANGELES • MONTREAL

pansion joint remover which provides a fast, sure method of removing old asphalt expansion joints on streets, highways and airports. Its average speed is about 1,500 lin. ft. per hour. —San Jose Pipe & Tank Co., 1596 West San Carlos St., San Jose, Calif.

Bronze Mouldings – An interesting folder describes bronze mouldings for permanence, safety and beauty in such structures as schools, hospitals, theaters, recreational buildings, hotels, auditoriums, office buildings, naval construction, institutions, factories and government buildings. — The Loxit Moulding Co., 1217 W. Washington Blvd., Chicago, Ill.

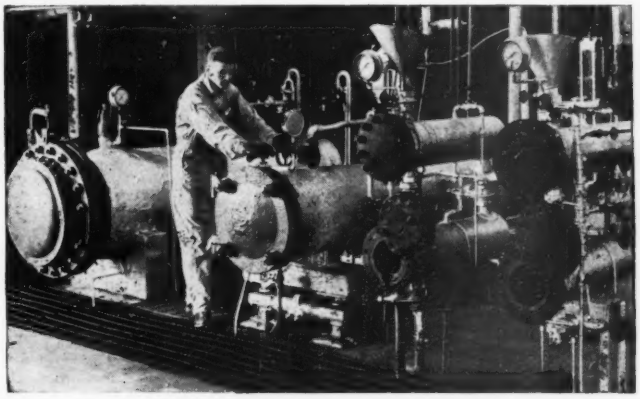
Motor Grader—A new catalog points out the special features of the No. 610 diesel-powered motor grader of 100 hp., and weighing from 25,200 to 27,000 lb. It has combination mechanical-hydraulic steering, full-floating rear axle, 8 forward speeds with a high transport speed of over 25 m.p.h., 14:00-24 rear tires on tandem, 12-ft. blade 28 in. wide and new, improved, faster mechanically-operated controls. —J. D. Adams Mfg. Co., Indianapolis, Ind.

Insulation Adhesives—There is a reference manual on sealers, surface coatings, cements, mastics, emulsions and other adhesives for use with various types of insulation. This 16-page manual gives a detailed discussion of the basic properties and uses—viscosity, coverage, flammability, heat flow and resistance to acids and alkalis. Also included is a reference chart which summarizes bonding and drying times, colors, temperature limits, types of thinner and pertinent application data for each type of adhesive material.—Benjamin Foster Co., 4623 W. Girard Ave., Philadelphia 31, Pa.

Water Equivalents — A handy pocket-size booklet contains quick reference charts for converting water measurements from one set of terms to another. It gives approximate figures for weight, power and volume; rate of flow; and velocity in different pipes. It is of value to all in the water works field.—R. W. Sparling, 101 Park Ave., New York, N. Y.

Concrete Admixture—Folder describes "Portite," which when used in the ratio of 4 oz. per bag of cement is said to be a controllable air-entraining agent, a wetting or dispersing agent and a promoter of cement hydration. The manufacturer claims it will improve concrete, cement plaster and mortar because it reduces the water re-

These experimental wood-treating cylinders vary in size from 2" x 12" to 4' x 20'. It is possible to make detailed studies ranging from test-tube quantities to semi-commercial quantities.



HOW KOPPERS FAMOUS TECHNICAL LABORATORY

helps improve serviceability of wood

The Koppers Technical Laboratory at Orrville, Ohio is one of the most complete wood-treating laboratories in the world. Here, Koppers experts, working with the best in modern equipment, lead the field in the development of improved wood-preservatives and techniques.

In addition to other research, the staff of this laboratory is constantly working on the following projects: a continuing study of pressure-treatment with creosote; the evaluation of all known treating materials; the development of new preservatives.

▸▸ How Koppers technical facilities can help you!

This famous Koppers Technical Laboratory is now equipped to handle your specific wood-treating problems. Its technical staff welcomes your inquiries, and will gladly recommend the *proper* technique of treatment . . . the *proper* type of preservative to meet your individual needs. Write for further information.

KOPPERS PRESSURE-TREATED WOOD

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

Viber Company has long recognized the destructiveness of steel vibrators on many popular form lining materials.

Realizing that damage to Celotex, plaster of Paris inserts for architectural concrete and plywood is expensive, they studied the possibility of using RUBBER TIPPED VIBRATORS.

After critical tests on many large concrete construction jobs, it was found that the new VIBER RUBBER TIPPED VIBRATORS greatly reduced form costs.

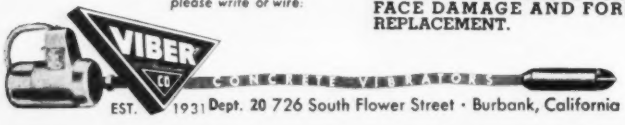
Made of high quality live rubber, Viber's Rubber Tipped Vibrators are built to withstand extreme punishment (the same rubber used to make automobile tires)

New style housing with replaceable rubber tips may be used in place of one-piece steel housing. Rubber tips are easily replaced. Simply unscrew worn part and install new tip.

Available in three standard VIBER sizes:

For additional information please write or wire:

VIBER RUBBER TIPPED VIBRATORS MINIMIZE GRINDING AND GREATLY REDUCE FORM FACE DAMAGE AND FORM REPLACEMENT.



Dept. 20 726 South Flower Street · Burbank, California

quirement, eliminates segregation, improves workability at low slump, reduces bleeding, increases bond to steel, reduces shrinkage, resists freeze-thaw effects, increases compressive strength, provides waterproofness, reduces finishing time, allows earlier removal of forms, prevents honeycombing and increases yield.—HOPPER PRODUCTS, INC., 12 E. 41ST ST., NEW YORK.

Motor Trucks—(20-p. folder) Describes special features in broad line of trucks and gives specifications and applications for each unit. Outlines complete information on both gasoline and diesel-powered units of both conventional and six-wheeler design.—FEDERAL MOTOR TRUCK CO., 5780 FEDERAL AVE., DETROIT 9, MICH.

Drilling Machines—Sibley Models D-24 and D-28 drilling machines are illustrated and described in a new catalog. The two-color bulletin lists the improved features. Accented is the increased operator efficiency gained by the Model D's V-belt drive direct from the motor to a 4-speed geared transmission; an "inching" button at the front of the machine which provides ease in changing speeds; and the handy 4-speed geared transmission lever.—SIBLEY MACHINE & FOUNDRY CORP., SOUTH BEND 23, IND.

Clearing Methods—Clearing methods for construction sites, mine and quarry operations, housing projects, and applications in the export field are featured in the new Caterpillar 15-page illustrated booklet "Clearing for Action." — CATERPILLAR TRACTOR CO., PEORIA 8, ILL.

Fan-cooled Motors—Nine outstanding features of totally-enclosed fan-cooled motors with tube-type air-to-air heat exchangers are described in a new bulletin. It is claimed that the problem of removing heat losses without exposing electrical parts to harmful atmospheric conditions has been solved in these motors, available in squirrel cage, wound rotor and synchronous types, for vertical or horizontal installation. Ratings range from 150 hp. at 1,200 rpm. to several thousand horsepower, at standard speeds of from 3,600 rpm. to about 300 rpm.—ALLIS-CHALMERS MFG. CO., MILWAUKEE, WISC.

Snow Removal—The battle of highway crews night and day against severe weather conditions and the "preseason" work conducted in improving the speedy operation of snow removal is shown in a current 11-page booklet "Beating Back the Blizzards." Other

(Continued on page 235)

Barber-Greene

Faster..Lowest Cost per Ton..
One-Man Operation

The versatility and one-man usefulness of B-G Portable Belt Conveyors offer almost unlimited possibilities for cutting the cost per ton handled — speeding up loading, unloading, stockpiling and conveying operations wherever they're put to work. These modern high-capacity conveyors handle all materials—stone, sand, gravel, coal, coke, ashes, bulk chemicals, bagged or boxed material — even wet concrete. Available in many sizes (lengths from 25' to 60'; belt widths from 18" to 30") with advanced features that include highly portable, pneumatic-tired wheel trucks, lighter, stronger frames, V-belt drives and speed reducers—no chains or sprockets—and 100% anti-friction bearings. Use the coupon or see your B-G distributor for full information. Barber-Greene Company, Aurora, Illinois.

101

Unloading-loading cars, trucks

Multiple setups for unloading-loading, conveying bulk or packaged material.

Fast, easy towing

New Literature Describes New Advantages of the B-G Portable Conveyors

USE THIS COUPON

BG Constant Flow Equipment

BARBER-GREENE COMPANY
AURORA, ILLINOIS

BARBER-GREENE COMPANY • AURORA, ILLINOIS

☐ Send new literature on B-G Portable Conveyors.

☐ Have distributor get in touch with me.

Name_____

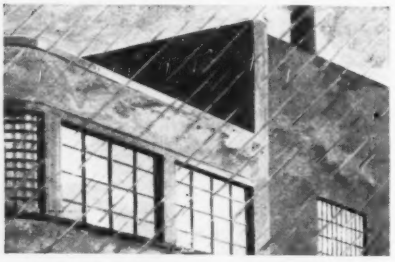
Firm Name_____

City_____ Zone____ State_____

Call in SONNEBORN on these *Tough* Problems!

TREATMENT OF CONCRETE

LAPIDOLITH-treated floors last where heavy traffic and trucking break down untreated concrete or terrazzo. Makes traffic surface literally hard as granite. Exclusive, penetrating agent carries hardening agent deep into concrete. Application is easy as mopping the floor.



WATERPROOFING AND DAMPPROOFING

HYDROCIDE for excluding water above or below ground, inside or out. There's a Hydrocide for every problem... from a transparent, colorless film that protects masonry walls from rain penetration... to a one-coat mastic as efficient as the conventional 5-ply membrane system.

PROTECTIVE PAINTING

S. R. P. penetrates the scale and bonds to sound metal...stops rust. Better resistance to weather and brine than red lead. Non-toxic. Not affected by fumes or ordinary industrial concentrations of most chemicals. Can be safely used in temperatures as high as 250°F. Available in colors.

If you have a tough problem in any of these three fields, call in your Sonneborn Man. Chances are, he has the answers, or can get them for you. If you don't have his name, write us your problem direct.

L. SONNEBORN SONS, INC.

BUILDING PRODUCTS DIVISION

80 EIGHTH AVENUE, NEW YORK 11, N. Y.

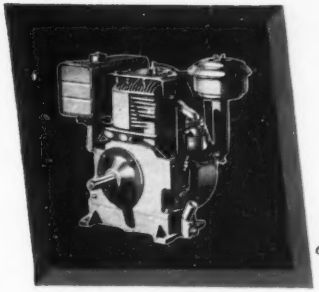
recent Caterpillar booklets deal with building and maintaining with diesel motor graders and keeping on schedule with off-track equipment.—CATERPILLAR TRACTOR CO., PEORIA 8, ILL.

Corrugated Metal Pipe—The advantages of flexible paved corrugated metal pipe in resisting corrosion, erosion, shearing and other damage is described in technical terms with typical applications and engineering data in a new 4-page illustrated bulletin issued by—UNITED STEEL FABRICATORS, INC., WOOSTER, OHIO.

Batching Plants – Three types of batching plants are described in a bulletin which has just come off the press. Included are all recent improvements in central mix, transit mix and concrete products plants and accessory equipment. Data, specifications and illustrations are arranged for easy interpretation and to present useful ideas to operators. The plants range in capacity from 100 to 400 tons and in most cases are combination plants with both aggregate and cement compartments.—HELTZEL STEEL FORM AND IRON CO., WARREN, OHIO.

Self-priming Pumps–A new type of self-lubricated shaft seal, which is entirely enclosed in a welded, pressed steel cartridge, is a feature of the 7M and 10M models of self-priming centrifugal pumps described in a bulletin. This entire unit may be easily replaced if necessary, thereby eliminating much of the cost and labor formerly required to replace such seals. Other features include: Fully automatic priming after the pump is once put into service; direct line flow of water or other liquid through suction opening to impeller; built-in suction check valve, which holds liquid in pump for re-priming and which eliminates the need for a foot valve in the hose; non-clogging impeller and wear plate, both of which are easily replaceable if wear occurs.—RICE PUMP & MACHINE CO., MILWAUKEE 4, WIS.

Handbook of "U" Values–Builders and contractors interested in providing good insulation for buildings of all kinds will value a new handbook of insulation values issued by this manufacturer of reflective insulation materials. The 108-page book lists 12,852 certified, F.H.A.—approved "U" values of various walls, floors and ceilings. It includes both summer and winter insulation values. The book, regularly priced at $1. a copy, is available free to qualified personnel in engineering, architecture, buildings, etc.—SILVERCOTE PRODUCTS, INC., 161 E. ERIE ST., CHICAGO 11, ILL.



"Preferred" Air-Cooled Power

Get America's No.1 Power Value Briggs & Stratton

You get *greater value*, dollar for dollar, when your equipment is powered by Briggs & Stratton 4-cycle, single-cylinder, air-cooled gasoline engines!

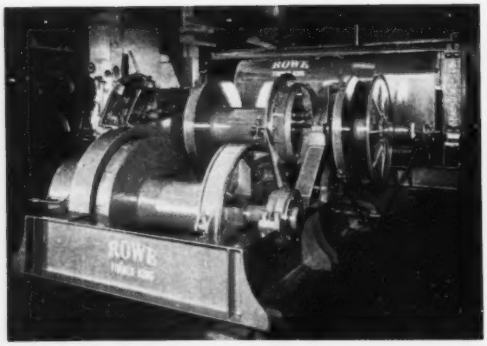
No. 1 in design, workmanship, and materials. No. 1 in performance, economy, and durability. No. 1 in quality and availability of service. That's why Briggs & Stratton powered equipment gives better service and greater satisfaction.

These sturdy, compact engines are No. 1 with manufacturers, dealers, and users alike because they know that these precision-built engines run smoother, last longer, with less operating cost. Specify America's preferred power — Briggs & Stratton — for *your* gasoline engine power requirements.

BRIGGS & STRATTON CORP., Milwaukee 1, Wis., U. S. A.

4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES
World Wide FACTORY SUPERVISED SERVICE

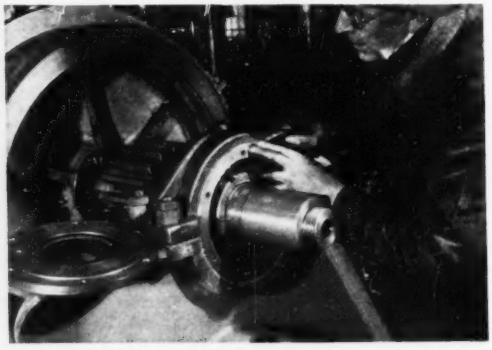
Torrington Spherical Roller Bearings Stand Up to Shock and Deflection In Rowe Timber King Yarders



For handling heavy materials like logs, beams and pipe, Timber King Yarders have to be rugged. To back up a 32-ton line pull, and make sure each Yarder will stand up to hard usage and severe shock, Rowe Machine Works uses 6 Torrington Spherical Roller Bearings on main, haulback and strawline drums.

These precision bearings give the low torque that means easy starting under heavy loads, smooth running with low power consumption. When shock loads deflect drum shafts or distort yarder frames, Spherical Roller Bearings compensate automatically for misalignment, keep rolling effortlessly.

Easy handling and installation of Spherical Roller Bearings, due to their unit design, is appreciated both in assembly and servicing. Readily accessible, the bearings, reduce down time in the field. Were it necessary, two men could easily dismount and remount all six bearings in a day.



Welded construction of yarder frames would make it difficult to secure accurate alignment with rigid bearings. Spherical Roller Bearings make proper initial and running alignment a matter of course. Time is saved in assembly. Long service life is assured under the most severe operating conditions.

In equipment you build or operate, specify Torrington Spherical Roller Bearings for long service life and minimum maintenance attention. Our engineers offer their experience to help you with your friction problems. Write us today. THE TORRINGTON COMPANY, South Bend 21, Ind. or Torrington, Conn. District offices and distributors in principal cities.

TORRINGTON SPHERICAL ROLLER **BEARINGS**

Spherical Roller • Tapered Roller • Straight Roller Needle • Ball • Needle Rollers

Locomotive Crane—A new catalog on 25 ton diesel locomotive crane is available. It illustrates the crane in action in magnet, bucket, hook and pulp woodwork. Man photographs of the important mechanical features are included.—AMERICAN HOIST & DERRICK CO., ST. PAUL 1, MINN.

Diesel Engines—(24-p. booklet) Design features, specifications and work capacities of six International diesel engines from 39 to 180 hp. Illustrations show engines stripped and performance charts reveal intermittent and continuous horsepower and average fuel consumption with wide-open throttle under intermittent load. Table provides lifting of engine capacities in operating rock crushers, generators, hoists, sawmills and pumps. All-weather starting system is explained. There is also a section on the fuel system.—INTERNATIONAL HARVESTER CO., 180 NO. MICHIGAN AVE., CHICAGO 1, ILL.

Safety Ladder Stage—(2-p. folder) Describes safety ladder stage to provide working area or scaffolding unit for all above-ground operations where ladders can be used. Affords a working area of 26x24 in. with frame fabricated of aluminum alloy, stage weighs less than 9 lb. Foot boards are of seasoned waterproof wood and are slotted for easy width adjustment.—JUANIATA CO., HUNTINGDON, PA.

Dumptors—(28-p. booklet) Titled "Cutting Haul Costs with Koehring Dumptors", this publication deals with off-road material hauling, with time study results, production charts and specifications. Mechanical features of equipment are outlined and described in detail. Dumptor has capacity of 5¼ cu.yd. struck measure and payload weight of 15,600 lb. Traveling speeds range from 5.37 to 18.94 mph. —KOEHRING CO., 3026 WEST CONCORDIA AVE., MILWAUKEE 10, WISCONSIN.

Rotary Positive Blowers—A 20-page bulletin, printed in two colors, opens with a foreword outlining some of the principal uses for rotary positive blowers. Operating advantages and principles are discussed, accompanied by several performance curves under various operating conditions. Separate pages are devoted to the four standard types of blowers as now being offered, showing complete views and cross-sections of each, with condensed specifications covering the four types.—ROOTS-CONNERSVILLE BLOWER CORP., 900 W. MOUNT ST., CONNERSVILLE, IND.

"INFERNO"

Stronger, Tougher, Safer Than Ever

FOR CONTINUOUS SERVICE UP TO 200 lbs.—400°F.

Since it was first designed, for the earliest steam hose applications, "Inferno" has been improved to meet progressively higher requirements. Today, it represents the ultimate in steam hose construction—a masterpiece of quality craftsmanship insuring unequalled strength, durability and safety.

Flexible steel sinews have been added to the carcass. A tough, red cover provides greater resistance to abrasive wear and all kinds of weather. The tube is made from the most efficient rubber compound ever developed for steam.

A Goodall "Standard of Quality" product, for pile driving and all other heavy-duty steam jobs, at pressures up to 200 lbs. and steam temperatures to 400° F. Made in sizes ½" to 2", I.D., in maximum lengths of 50 feet.

Contact Our Nearest Branch, or Send for New Illustrated Folder

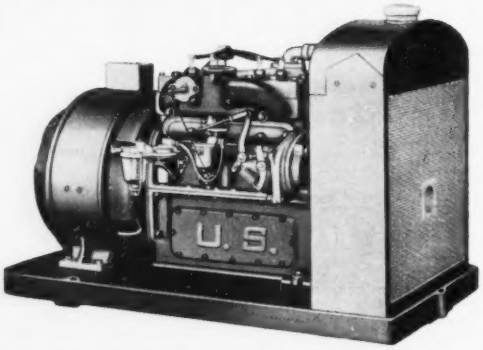
GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.

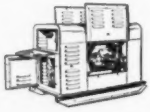
Branches: Philadelphia • New York • Boston • Pittsburgh • Chicago • St. Paul • Los Angeles
San Francisco • Seattle • Salt Lake City • Houston • Distributors in Other Principal Cities

Est. 1870

A complete line of on-the-job power!

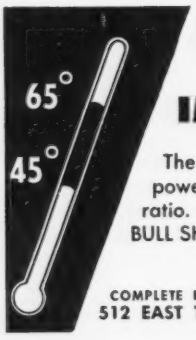


"U.S." representatives can give you unbiased counsel on the best type of electric plant to fit your needs — for the "U.S." line includes *all* types. "U.S." builds electric plants powered by diesel, gasoline or natural gas . . . from ½ to 140 kw, AC and DC. Backed by over 40 years engine-generator manufacturing experience. See your "U.S." dealer, or write the factory.



U.S. ELECTRIC PLANTS

UNITED STATES MOTORS CORP.
579 Nebraska Street Oshkosh, Wisconsin



IS 45° to 65° CONCRETE SPECIFIED?

IT'S EASY WITH THE

IMMERSION METHOD

(PATENTS PENDING)

The Immersion Method will lower plant cost, lower power cost, and maintain accurate water-cement ratio. It is now in use on 2,100,000 c. y. pour at BULL SHOALS DAM, MOUNTAIN HOME, ARKANSAS.

ROYAL McSHEA

COMPLETE REFRIGERATING PLANTS ENGINEERED, SOLD, AND ERECTED
512 EAST TWENTY-FIRST STREET . . . WICHITA 2, KANSAS

Manufacturers' Activities

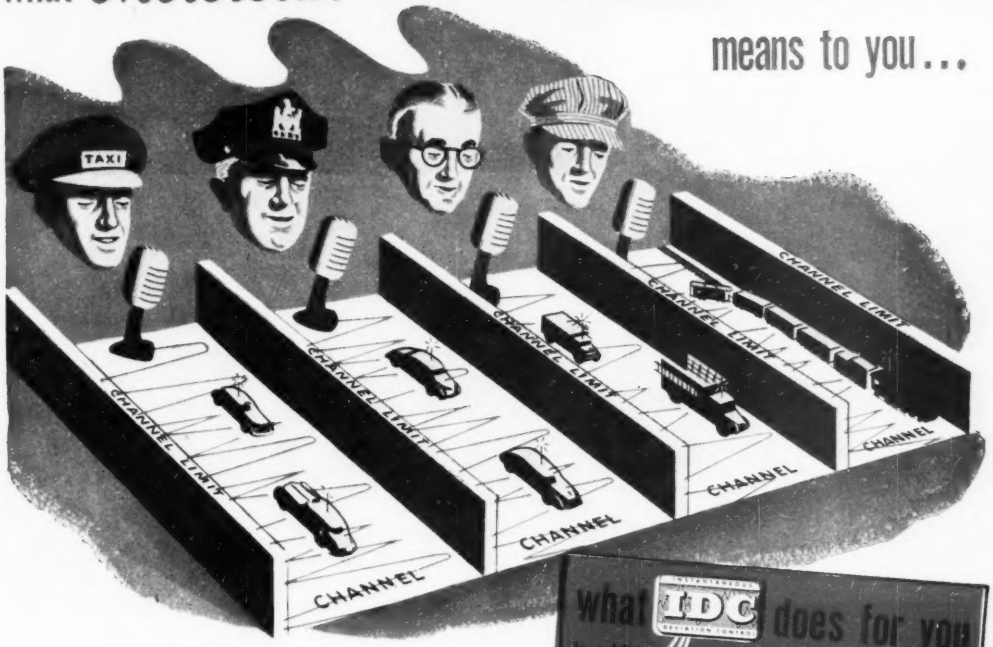
Sales—A. H. Tetrick is sales manager of the construction machinery division of SOUTHWEST WELDING & MFG. CO. . . . A. S. Rubin, Jr., is sales manager for MARLOW PUMPS, Ridgewood, N. J. . . . Philadelphia branch sales office of SYNTRON CO. has moved to larger quarters at 1018-20 West Lehigh Ave., Philadelphia 33, Pa. . . . Jas. V. Wilcox and J. C. McGuire are sales and service representatives of KENNAMETAL, INC. of Latrobe, Pa., at Provo, Utah and Eastbank, W. Va., respectively . . . R. F. Garity has been appointed eastern industrial territory manager of the ALLIS-CHALMERS TRACTOR DIVISION . . . Rodney Fox has joined the sales staff of FWD, Clintonville, Wis.

T. F. Rose has become manager of TIMKEN ROLLER BEARING SERVICE AND SALES, LTD., at Toronto, Ont. . . . HYSTER CO. has named F. W. Vigneault, Jr., as district representative for tractor equipment in the northeastern territory . . . Homer L. Knouse is southern sales representative for the construction machinery division of the CHAIN BELT CO. of Milwaukee . . . PENN METAL CO. INC., has appointed A. D. Goodson, Jr., as its district sales manager for the Texas territory at 3802 Ruth St., Houston . . . A. W. McGraw has been added to the road machinery sales staff of the W. A. RIDDELL CORP., Bucyrus, Ohio . . . K. H. Brunt is industrial sales representative and W. E. Knox industrial sales engineer for the California division of the INTERNATIONAL DERRICK & EQUIPMENT CO. of Columbus, Ohio, at Torrance, Calif. . . . I. N. Kimsey is field sales manager of the industrial products sales department of THE B. F. GOODRICH CO., and H. F. Mosher is manager of the Dallas, Tex., district . . . L. P. Oelschlager is assistant sales manager of the gasoline hammer division of BARCO MFG. CO., Chicago . . . Marvin Wall is sales engineer for the heavy machinery division of NORDBERG MFG. CO. in the southwest territory at Cotton Exchange, Dallas.

Distributors—McCALL-BOYKIN CO., INC., Calvert & 20th Sts., Baltimore, Md., is new distributor of HYSTER lift truck, straddle trucks and mobile cranes in the vicinity of Baltimore . . . CHASE PARKER & CO., INC., are distributors in the Boston, Mass., area for DIAMOND CHAIN CO., INC., Indian-

(Continued on page 242)

what *Motorola's* "GOOD NEIGHBOR POLICY" means to you...

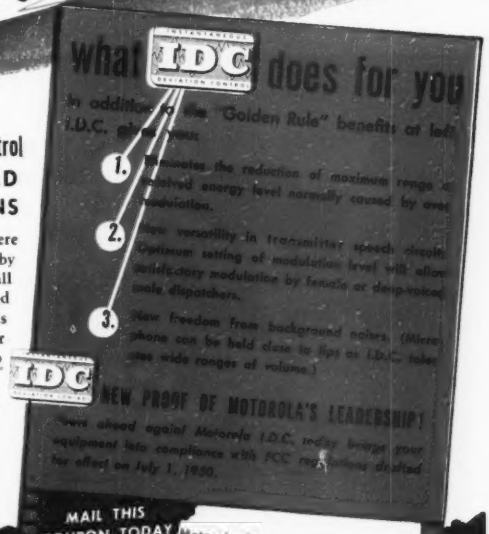


Motorola I.D.C. —Instantaneous Deviation Control

ANOTHER MILESTONE ALONG THE ROAD TOWARD ADJACENT CHANNEL OPERATIONS

Motorola Instantaneous Deviation control eliminates the severe nuisance interference that develops from channel "spill-over" by means of a new slope limiting device now an integral part of all currently manufactured Motorola transmitters. I.D.C., applied universally, will make close channel occupancy practicable. It is an *absolute solution*—not a conventional compressor amplifier or clipper-limiter compromise. Motorola's I.D.C. requires no "attack time," but controls carrier excursions instantly.

Motorola I.D.C. is available in kit form for all existing Motorola transmitters—mobile and base station. By installing I.D.C. in your transmitters—and urging your channel neighbors to reciprocate, you can enjoy new efficiency of communication.



MAIL THIS COUPON TODAY

Motorola Inc. Communications Div.
4545 Augusta Blvd., Chicago 51, Illinois
Dept. ENR

Please send me additional information on Motorola I.D.C.

NAME_____
COMPANY_____
POSITION_____
ADDRESS_____
CITY_____ STATE_____

Motorola

FM 2-WAY RADIO

MOTOROLA: *World leader in mobile 2-way radio communications*

Canadian Distributor: Rogers Majestic Ltd., Toronto - Montreal

Garrison Dam, under construction on the Missouri River near Garrison, North Dakota, will be the world's largest rolled-fill earth dam. When completed, the dam will be 210 feet high and over 2 miles long with a base width of nearly half a mile—a total fill of more than 70,000,000 cu. yds.

A load a

WITH GM

Euclid Bottom Dump, powered by GM Series 71 Diesel, dropping a load of fill dirt. Eight of these units, working with a BV Loader, hauled 631 such loads in a 10½ hour working day, an average of one load a minute. Haulage distance at this stage was about 500 yards.

ON the world's largest rolled-fill earth dam near Garrison, North Dakota, records for moving dirt are being smashed every day.

Bulk of the heavy equipment on the Garrison Dam project is powered by General Motors Series 71 Diesel engines. GM Diesels were selected for this job because–as the contractor puts it–"They can move dirt faster."

Reasons for this superior performance are obvious. GM Diesel engines are

Garrison Builders, Inc., operators of this equipment, are working on the 14 million yard stage-one contract on the west side of the river. Shown is a convoy of four Euclid Bottom Dumps approaching the embankment fill area.

minute...

DIESEL POWER

2-cycle—with power on every piston downstroke. They deliver a smooth, steady power output—twice as many power impulses for each revolution of the crankshaft. This added power-per-turn makes them more compact with more horsepower for their size than other type engines. They start instantly on their own fuel. Their simplified construction and clean design make maintenance much easier. Service problems are greatly simplified by the interchangeability of parts.

Add up these advantages and you'll see why General Motors Diesels are the first choice of construction men for any heavy-duty operation. Let us show you how these engines can bring greater efficiency and economy to your particular job. See your local equipment distributor or write direct to us.

GM
GENERAL MOTORS
DIESEL POWER

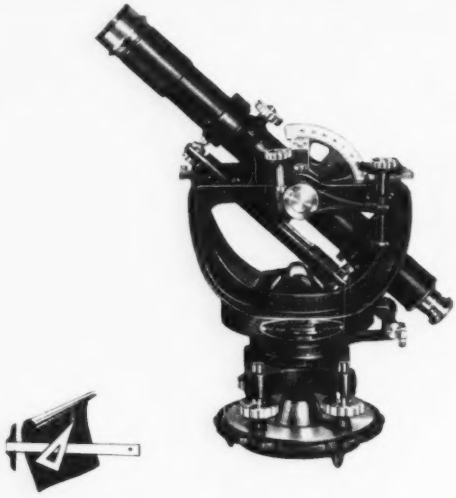
DIESEL BRAWN WITHOUT THE BULK

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES...Up to 200 H.P. DETROIT 28, MICHIGAN MULTIPLE UNITS...Up to 800 H.P.

Avoid COSTLY ERRORS

Save Time and Money



You'll find

THE DAVID WHITE UNIVERSAL LEVEL-TRANSIT

IS THE MOST PRACTICAL ALL-AROUND CONTRACTOR'S INSTRUMENT YOU'VE EVER HANDLED

YES, you'll be time and money ahead if you use a David White Universal Level Transit in connection with all your survey and checking operations — your building and road construction. It is a low-cost, extremely accurate, amazingly rugged instrument. It quickly converts from level to transit. It's designed to provide maximum strength and protection to all parts — assuring you constant precision over long periods of use.

Among its many features are: Full 12" telescope with 25 power coated optics, a patented ball-bearing race, lock and release lever system, easy perfect alignment adjustments, guarded horizontal circle, vernier accurate to 5' vertical arc 3" diameter. Write today for complete information, price, etc., and the name of our nearest dealer.

We offer complete, prompt, repair service on all makes of instruments — levels, transits, theodolites, etc.

DAVID WHITE COMPANY

Manufacturers of
INSTRUMENTS FOR ENGINEERS, SURVEYORS AND BUILDERS
315 West Court St. • Milwaukee 12, Wis.

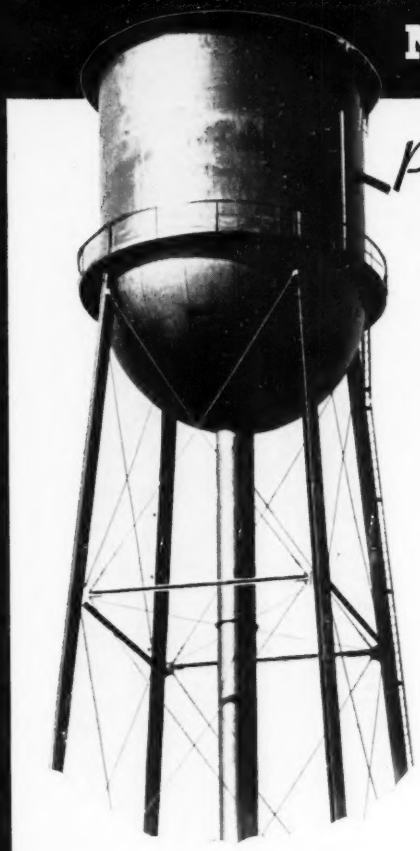
apolis, Ind., at 288-290 Congress St., Boston . . . Dan G. Cogwood, Jr., 272 Highland Ave., Newton, Mass., is exclusive representative in Maine, New Hampshire and part of Massachusetts for GEORGE HAISS MFG. CO., INC., division of PETTIBONE MULLIKEN CORP. —conveyors, loaders, buckets, material handling equipment, crushers, asphalt plant and railroad equipment . . . Distributorship for CLARK EQUIPMENT Co.'s fork lift trucks and industrial towing tractors has been granted to BOND INDUSTRIAL EQUIPMENT CO., 51 Clarkson St., New York . . . VICTOR EQUIPMENT CO., San Francisco, Calif., is exclusive distributor for Nelson steel welding equipment and products in the Pacific coast area . . . J. P. WAITE, INC., 3304 West Pierce St., Milwaukee, Wis., has been appointed to a full line dealership for DAVEY COMPRESSOR CO., Kent, Ohio.

Personalities—H. S. Dershimer is a direct factory representative in Tulsa, Okla., for MACWHYTE CO. of Kenosha, Wis. . . . Lloyd L. Bower is chief engineer of WAUKESHA MOTOR CO., succeeding J. B. Fisher, retired . . . Dr. G. V. Slottman is director of research and engineering for AIR REDUCTION CO. . . . Thos. J. Dale is superintendent of the main manufacturing plant of DURISOL, INC., at Beacon, N. Y. Durisol is a new low-cost building material . . . Kempton Dunn is vice-president and Cyrus E. Brush secretary of the AMERICAN BRAKE SHOE CO. . . . Louis R. Gaicnnic is director of personnel of FAIRBANNS, MORSE & CO., at Beloit, Wis. . . . Malcolm D. Corner is commercial research manager for AMERICAN BRIDGE CO. at Pittsburgh, Pa. . . . P. M. Hummer is manager of the Philadelphia district office of the ARMSTRONG CORK CO. building materials division . . . Former Postmaster General James A. Farley is now president of the GENERAL BUILDERS SUPPLY CORP., succeeding the late John P. Kane . . . New appointments by SKF INDUSTRIES, INC. are Stuart H. Smith, Cincinnati district manager; field representatives, C. N. Benson and D. B. Eden, Boston; A. R. Ehrnschwender, Cincinnati; J. T. Paradine, Atlanta, Ga.; and G. L. Hansen, Portland, Ore.

Deceased—John E. Urban, 81, retired purchasing agent of FAIRBANKS, MORSE & CO., died Feb. 7 . . . John H. Adams, 92, a pioneer in the development of the iron and steel industry in the Birmingham, Ala., district, died Feb. 10 . . . Harry W. Beedle, 69, former manager of the Boston branch, THE ELECTRIC STORAGE BATTERY CO., died Feb. 3 . . . Hugo L. Olson, 71, president of the SUNDERSTRAND MACHINE TOOL CO., Rockford, Ill., died

The Tanks are Elevated

NOT THE PRICES!



Posey Iron Has Its Own

"INFLATION RESISTANCE"

Program!

Posey Iron believes that there's no need to elevate prices on elevated tanks. Posey long ago adopted its own inflation resistance program . . . has never raised prices simply to follow the "trend". Instead, Posey engineers bear down to eliminate cost-padding frills and unnecessary steps of construction . . . overlook nothing that will permit estimates that are low *for workmanship of high integrity.*

Posey tanks are welded steel throughout . . . with no rivets where corrosion might gain a foothold. With interior surfaces as smooth and curved as those of a fine ball bearing, Posey Tanks are leak-free . . . corrosion resistant.

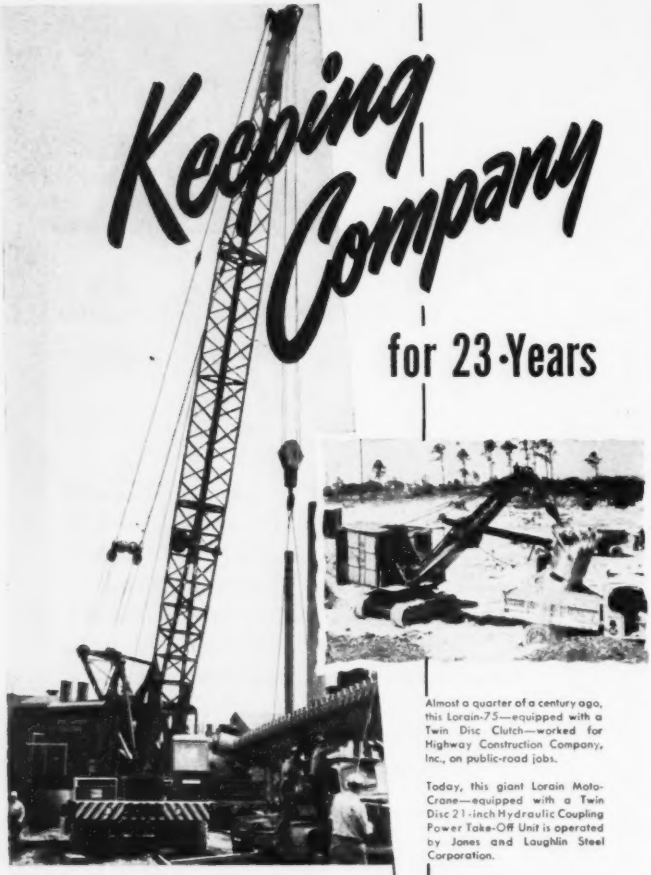
Let us know your conditions and we may be able to show you how Posey elevated storage tanks can increase capacity . . . aid production . . . reduce maintenance . . . and perhaps eliminate expensive equipment. Write today. No obligation.

POSEY IRON WORKS, INC.

***formerly* LANCASTER IRON WORKS, INC.**

LANCASTER, PA., U.S.A.

TANKS
WROUGHT IRON, STEEL AND ALLOY STEEL PIPE
O. D. PIPE
TEES
ELBOWS
AUTOCLAVES
STEEL PLATE CONSTRUCTION



Almost a quarter of a century ago, this Lorain-75—equipped with a Twin Disc Clutch—worked for Highway Construction Company, Inc., on public-road jobs.

Today, this giant Lorain Moto-Crane—equipped with a Twin Disc 21-inch Hydraulic Coupling Power Take-Off Unit is operated by Jones and Laughlin Steel Corporation.

In November, 1925, The Thew Shovel Company installed a Twin Disc Clutch on its new Lorain-75 shovel, a machine that marked the beginning of Thew's present line of products.

Nearly 23 years later, Thew introduced a rubber-tired, two-engine Lorain Moto-Crane, equipped with a Twin Disc Hydraulic Power Take-off. Moto-Crane, said to be the world's largest, weighs 65 tons and has a capacity of 45 tons at a 12-foot radius.

For nearly a quarter of a century Twin Disc units have been used on heavy-duty equipment built by The Thew Shovel Company—one of 97 leading manufacturers of material-handling and earth-moving equipment who find Twin Disc Clutches and Hydraulic Drives efficient units for power transmission. TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division, Rockford, Illinois).

SPECIALISTS IN INDUSTRIAL CLUTCHES SINCE 1918

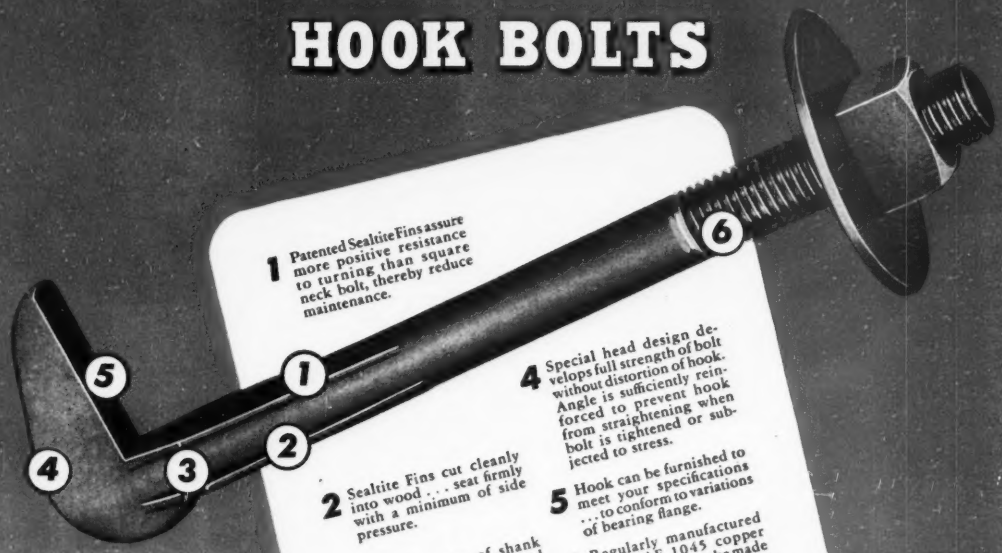
Feb. 1 . . . Fred D. Wood, 70, founder of the KENTUCKY ROCK ASPHALT CO., died Jan. 21.

Miscellany—PENN METAL CORP. OF PENNSYLVANIA is celebrating its 80th anniversary this year . . . WALTER BATES CO., INC., has moved from 1707 Rowell Ave., Joliet, Ill., to 500 Milk Road . . . CHAIN BELT CO. of Milwaukee has moved its Los Angeles district office and warehouse to 3838 Santa Fe Ave., Los Angeles 11, Calif. . . . THE TRACTMOTIVE CORP., formerly of Findlay, Ohio, has moved to its new plant at Deerfield, Ill. . . . Construction by THE RUBEROID CO. of a dry felt mill to be erected on property adjoining the company's asbestos and asphalt roofing mills on Emogene Street, Mobile, Ala., is to be started immediately . . . THE CLEVELAND CRANE & ENGINEERING CO., Wickliffe, Ohio, has been purchased outright by THE MCNEIL MACHINE & ENGINEERING CO. of Akron . . . Top Management of MARSH WALL PRODUCTS, INC., has been re-organized for operation as a subsidiary of MASONITE CORPORATION. These six Masonite directors are now on the Marsh board—John Alexander, Jr., Ben O. Anderson, John M. Coates, Mr. Holland, M. P. McCullough and Aytch P. Woodson, Alvin C. Marsh, Victor R. Marsh and John J. Marsh, all former Marsh directors, remain on the new board. Masonite officers moving into Marsh executive positions are Mr. Holland, president; Mr. Anderson, treasurer, and Mr. Coates, assistant secretary. Election of Victor Marsh as executive vice-president, Alvin Marsh as vice-president and John Marsh as secretary and assistant treasurer completed the new roster . . . PERMANENTE CEMENT CO. has purchased a 5-acre section of the Portland, Ore., shoreside tract known as the Albina River Lots. The property, located on the Williamette River shore, is immediately adjacent to leased facilities now being used by Permanente to supply 750,000 lb. of cement for the construction of McNary Dam, on the Columbia River.

Dam the Fire—Construction of a proposed dam across the Little Missouri River may in a few years snuff out North Dakota's "Fires of Hell." The proposed dam promises to douse flames which have burned steadily underground for more than 75 years. Over that time a vein of lignite has burned steadily below the earth's surface, creating three miles of miniature badlands. The burning coal mine now is only three miles from the bid bend of the Little Missouri, where the Bureau of Reclamation is considering construction of a dam.

SEALTITE

HOOK BOLTS



1 Patented Sealtite Fins assure more positive resistance to turning than square neck bolt, thereby reduce maintenance.

2 Sealtite Fins cut cleanly into wood . . . seat firmly with a minimum of side pressure.

3 Non-variation of shank diameter from tip to head prevents splitting of wood . . . assures absolutely tight installation . . . eliminates air pockets and retards corrosion.

4 Special head design develops full strength of bolt without distortion of hook. Angle is sufficiently reinforced to prevent reforming from straightening hook bolt is tightened or subjected to stress.

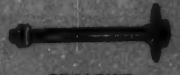
5 Hook can be furnished to meet your specifications . . . to conform to variations of bearing flange.

6 Regularly manufactured from SAE 1045 copper bearing steel. Can be made from other carbon or alloy steel.

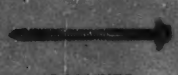
Available in HOT-DIP GALVANIZED-SEALED IN ZINC finish for the economy of longer life.

ILLINOIS CENTRAL

The Illinois Central along with 80% of America's Class One railroads specify one or more Sealtite products for car construction, bridges, trestles, and all other types of timber construction and maintenance.

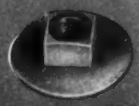


SEALTITE TIMBER BOLT



SEALTITE LAG SCREW

SEALTITE DOMEHEADED BOLT



SEALTITE WASHER NUT

SEALTITE CAR BOLT

LOCKTITE NUT

LEWIS BOLT AND NUT COMPANY
504 MALCOLM AVE. S. E.
MINNEAPOLIS 14, MINNESOTA

Manufacturer of Standard Bolts & Nuts, Threaded Rods, Upset Forgings, Drop Forgings

LEWIS BOLT AND NUT COMPANY
504 Malcolm Ave. S. E., Minneapolis 14, Minn.

Please send my FREE copy of the new 1949 Catalog.

COMPANY NAME _____

ADDRESS _____

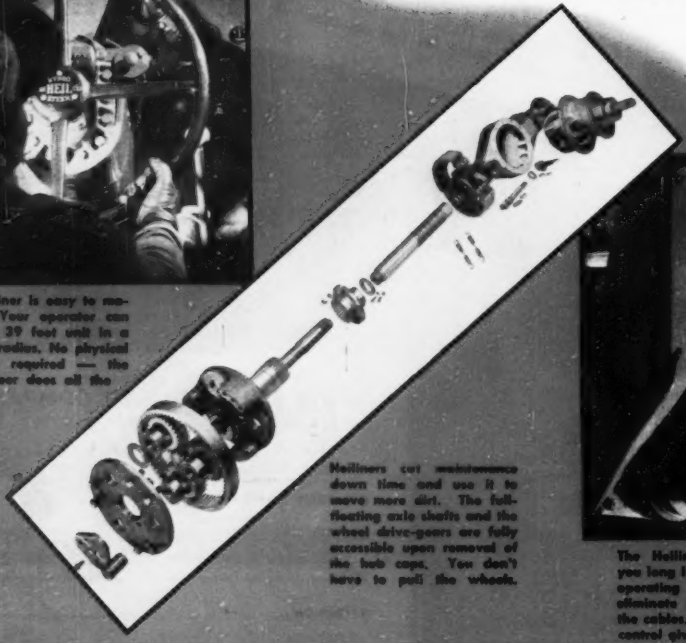
CITY _____ STATE _____

ATTENTION _____

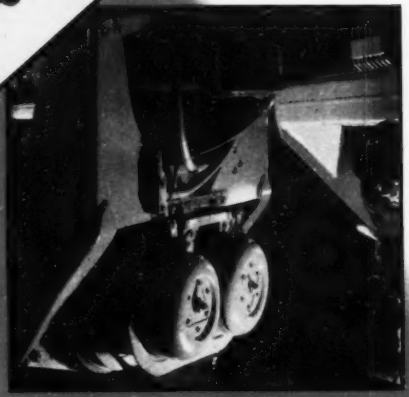
The Heiliner is furnished with either a 16.5-cu. yd. scraper or 18-cu. yd. bottom-dump wagon. The two units are interchangeable.

THE Heiliner Puts More

The Heiliner is easy to manouver. Your operator can turn the 39 foot unit in a 22-foot radius. No physical effort is required — the Hydro-Steer does all the work.



Heiliners cut maintenance down time and use it to move more dirt. The full-floating axle shafts and the wheel drive-gears are fully accessible upon removal of the hub caps. You don't have to pull the wheels.



The Heiliner's cable power-control unit gives you long life and low-cost operation. The smooth-operating brakes and cushioned clutch action eliminate jerks and shocks — reduce wear on the cables. The large drums run cool. Finger-tip control gives your operator fast, effortless action.

Gives You Faster Haul Cycles

Profit in Your Pocket

1 Because the Heiliner's super-axle, with its overall gear reduction of 153 to 1, provides a low-torque drive that gets every bit of power out of the new 200 hp Cummins Diesel.

2 Because Heil's patented, positive Hydro-Steer prevents nosing, snaking, or jack-knifing—lets your operator run at highest possible speeds, make more round trips.

You can count on larger earthmoving profits, when you have these and many other Heiliner features working for you. Send for complete information about the Heiliner and the complete line of Heil earthmoving equipment. Check the coupon and mail it today.

HEIL

THE HEIL CO.
Dept. 139
3001 W. Montana Street, Milwaukee 1, Wisconsin

Please send me complete information on the items I have checked below:

- ☐ **Heiliner**—2-wheel prime mover
- ☐ **Power Control Units**
- ☐ **Scrapers**—tractor-drawn
- ☐ **Light-Duty Dump Bodies** —specify make of truck
- ☐ **Hydraulic Dozers**—specify make of tractor
- ☐ **Heavy-Duty Dump Bodies** —specify make of truck
- ☐ **Cable Dozers**—specify make of tractor
- ☐ **Platform Conversion Hoist**

Name ..... Title .....
Company .....
Address .....
City ..... ( ) State .....

The fourth of a series in the interest of more efficient use of steel . . . a vital American resource.

INHERENT STRENGTH

the strength of rail steel plus the bond of Laclede Multi-Rib Design

The actual inherent strength of rail steel is fully harnessed for work in the Laclede Multi-Rib bar design. Rail steel rolled into bars with Multi-Rib design offers a yield strength *in* excess of 55,000 PSI—with greatly increased anchorage. Laclede Multi-Rib Reinforcing Bars meet the new ASTM Specification A 305-47T, which provides a long-needed yardstick for anchorage in reinforcing bars, assures a more efficient use of steel.

Modernize your specifications with ASTM A 305-47T

Modernize your steel reinforcing with Laclede Multi-Rib Bars

LACLEDE

Producers of Construction Steel

LACLEDE STEEL COMPANY

St. Louis, Mo.

Diamond Core

Drilling

CORE BORINGS for Foundations, Dams, Bridges and all Heavy Structures GROUT HOLES

Tinney Drilling Co.
Grafton, W. Va.

OHIO LOCOMOTIVE CRANES

GASOLINE • DIESEL
ELECTRIC • STEAM

25 TO 40 TON CAPACITY

THE OHIO LOCOMOTIVE CRANE CO
BUCYRUS, OHIO

Men and Jobs

Earl G. Harrington recently moved up from assistant chief to chief of the division of engineering in the Bureau of Land Management, Department of the Interior, succeeding **Albert C. Horton, Jr.**, retired. During 40 years of almost continuous service with the Interior Department, Mr. Harrington rose through successive grades of the cadastral engineering organization to his present post. He performed government surveys in 22 states and in 1928-29 was granted leave of absence to survey the boundary line between Wisconsin and Michigan. In 1945 he became assistant supervisor of surveys, Cadastral Engineering Service, in Denver, and in 1948 moved to Washington as assistant chief of engineering.

Don McBride, secretary manager of the National Reclamation Association, Washington, D. C., has resigned to become manager of the Oklahoma Water Development Association, formed by 25 Oklahoma City businessmen to develop water and soil resources in Oklahoma and in the watersheds of the Red and Arkansas rivers. Mr. McBride, former state engineer of Oklahoma from 1939 to 1946, was president of the Association of Western State Engineers in 1941. His new office will be in the Skirvin Tower, Oklahoma City, Okla.

John C. Norton, civil engineer and surveyor has removed from Royal Oak, Mich., to 415 Fifth St., Traverse City, Mich.

Election of **Timothy G. Sughrue** of Swampscott, Mass., as executive vice-president of the Boston & Maine Railroad was announced recently. He has been chief engineer of the Boston & Maine and Maine Central railroads since 1942. He is a graduate of the University of New Hampshire. **Stanley G. Phillips** of Portland, Me., has been appointed chief engineer. He is a graduate of the University of Maine and was formerly with the Lehigh Valley Railroad. **James W. Wiggins** has been made maintenance engineer of the Maine Central. He is a graduate of the University of Maine and started on the Erie Railroad.

Kent Mathewson has resigned as city manager at Asheboro, N. C., to become city manager of Martinsville,

(Continued on page 252)

CHOOSE "QUICK-WAYS" FOR SURE PROFITS!

REG. U. S. PAT. OFF.

PORTABILITY AND CAPACITY . . . these are the fundamentals you KNOW you want in a truck shovel. You get PORTABILITY in a "QUICK-WAY" because it is built of steel for lightness and strength, no heavy counter-weights to slow you down. You get CAPACITY because balance and stability are designed into your "QUICK-WAY".

In addition you get SPEED . . . PERFORMANCE . . . VERSATILITY . . . INTERCHANGEABILITY . . . SIMPLICITY . . . ECONOMY OF OPERATION . . . LOW FIRST COST . . . LOW MAINTENANCE . . . and EXTRA PROFITS.

A "QUICK-WAY" mounts on ANY standard truck of proper size to go anywhere a truck can go at truck speed. A "QUICK-WAY" is CONVERTIBLE IN MINUTES from Shovel to CRANE, DRAGLINE, CLAMSHELL, PILE DRIVER, SCOOP, TRENCH-HOE or BACK FILLER. You buy only the attachments you want. A "QUICK-WAY" is simply built, with many interchangeable parts, all easy to service . . . and durable.

THE FUNDAMENTALS built into every "QUICK-WAY" add up to sure profits on a small investment, with one of the most useful machines you can own.

NO MATTER WHAT OTHER EQUIPMENT YOU OWN, you need "QUICK-WAYS" too. There's a "QUICK-WAY" owner near you; ask HIM.

• Service available from Distributors strategically located throughout U. S. Others worldwide

MODEL E: 4/10 cu. yd. cap., mounts on any standard 5-ton truck.

MODEL J: ¼ cu. yd. cap., mounts on any standard 1½-ton truck.

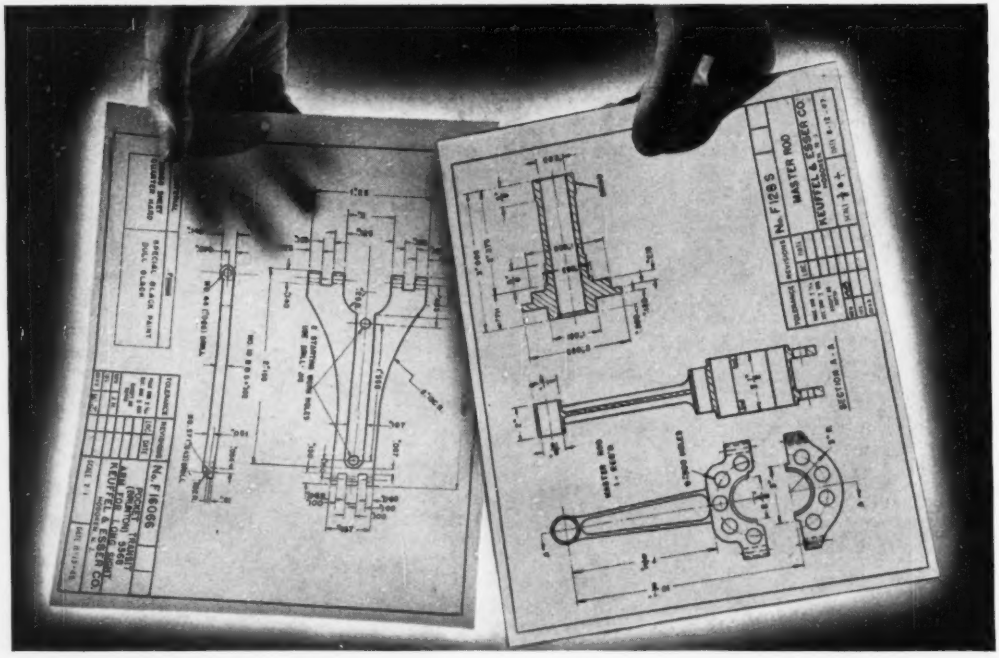
For speed, portability, economy of operation, and adaptability to a wider range of jobs, nothing of comparable size equals a "QUICK-WAY" Truck Shovel.

"QUICK-WAY" TRUCK SHOVEL CO.

DENVER, COLORADO

K+E partners

For 82 years K&E equipment and materials have been



ONLY HELIOS* DRY DEVELOPING MATERIALS GIVE YOU:

K&E QUALITY. Trusted by draftsmen and engineers for 82 years.

K&E DEPENDABILITY. Your best assurance of consistent results in making positive line prints.

Only when you use dependable materials can you get consistent results in making positive line prints.

To be sure of absolute K&E standards in the color-forming components required for these dry diazo products, we established a new plant where we manufacture HELIOS materials exclusively. We not only control and make the finished materials, but actually manufacture, from the raw materials, the image-forming chemical components as well. Thus HELIOS papers, cloths and films are the product of 82 years of K&E experience and K&E insistence on quality first.

HELIOS dry developed materials cover a wide field of reproduction needs. They consist of opaque papers (black, blue and maroon line) and opaque cloth for working prints, besides transparent papers and cloth and clear and matte films, for intermediate originals (to use instead of originals).

in creating . . .

partners of the draftsman, the engineer and the scientist in shaping the modern world

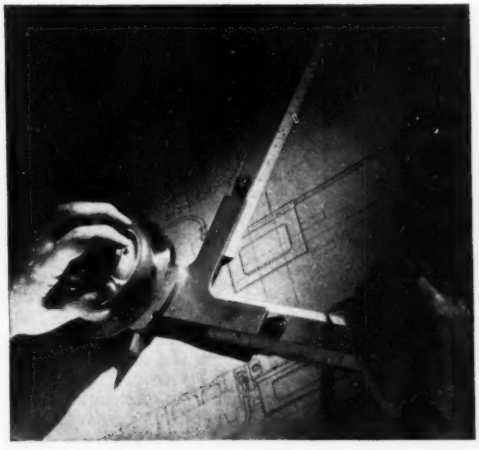
For samples and full information about the HELIOS line and what it can do for you, ask any K&E Dealer or Branch or write us here in Hoboken, N. J.

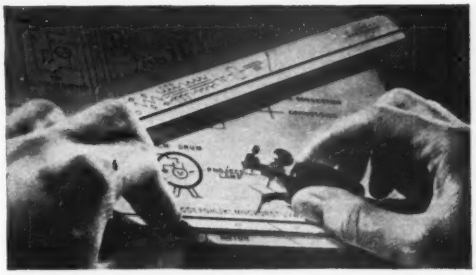
PARAGON* DRAFTING MACHINES TAKE WASTE MOTION OUT OF DRAWING

The PARAGON Drafting Machine combines T-Square, triangles, protractor and scales, all in one single unit, controlled entirely by one hand. The scales glide into any position on the board. The lightest touch rotates them to the angle desired. You can draw all lines to exact length.

The design of the PARAGON Drafting Machine assures permanent accuracy. The open center arm construction makes it practically impossible to disturb the band tension, which is properly set at the factory and needs no further adjustment.

Let your K&E Dealer or Branch demonstrate this machine or write for full description to Keuffel & Esser Co., Hoboken, N. J.





LEROY* LETTERING AND SYMBOL DRAWING IS UNIFORM AND QUICK

LEROY lettering and symbol drawing need no special skill or training. LEROY equipment offers a wide variety of alphabets and sizes, including Regular Gothic, Reversed, Condensed, Extended and Outline Gothic, Cheltenham, Greek, Isometric alphabets and ellipses, Electrical, Map and Welding symbols.

K&E can make special LEROY templates with your own words, phrases, designs, symbols or trade marks.

Ask your K&E Dealer or any K&E Branch for a demonstration or write to K&E, Hoboken, N. J. for the LEROY Booklet.

*Trade Mark®

KEUFFEL & ESSER CO.

EST. 1867

NEW YORK • HOBOKEN, N. J.

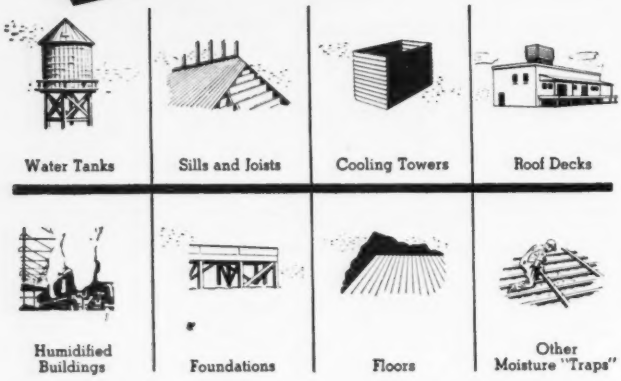
CHICAGO • ST. LOUIS • DETROIT • SAN FRANCISCO

LOS ANGELES • MONTREAL

Where Wood Needs Protection from DECAY and TERMITES

WOLMANIZED PRESSURE TREATED LUMBER

. . . lasts 3 to 5 times longer



Here are six common conditions where WOLMANIZED Pressure-Treated Lumber provides protection from decay and termites:

1. Where excessive ground moisture, rain or thaws cause early decay failures.
2. Where wood near the ground is open to termite attacks.
3. Where wood is in contact with damp concrete or masonry.
4. Where steam and vapor from industrial processes promote wood decay.
5. Where walls, floors, ceilings are subject to condensation from refrigeration.
6. Where wood is exposed to moisture in artificially humidified buildings.

Investigations by qualified technologists prove that on installations where decay and termites ordinarily shorten lumber life, WOLMANIZED Pressure-Treated Lumber lasts *Three to Five Times Longer* than untreated wood.

Such lasting protection is assured because penetrating, preservative solutions are forced, by vacuum-pressure treatment, deeply into the wood fibers of WOLMANIZED Lumber. And, WOLMANIZED Lumber is clean, odorless, paintable, non-corrosive, non-leaching and glueable. Only WOLMANIZED Lumber offers *all* these extra advantages.

YOU'LL PROFIT BY GETTING THIS INFORMATIVE BOOKLET

Get all the facts and cost-saving figures on WOLMANIZED Lumber. See why it offers you the best protection available against wood decay and termites. Write for this valuable booklet today.

AMERICAN LUMBER & TREATING COMPANY

General Offices: 332 South Michigan Avenue, Chicago 4, Illinois

Branch Offices: Baltimore, Boston, Jacksonville, Fla., Los Angeles, New York, Philadelphia Portland, Ore., San Francisco, Washington, D. C.

Va., which recently adopted that form of government.

The engineering firm of Jones & Henry, consulting sanitary engineers, Toledo, Ohio has announced admission to partnership of the following engineers: **George N. Schoonmaker, Spencer D. Downing, Bernal H. Swab,** and **Leon G. Williams.** The name of the firm is being changed to Jones, Henry & Schoonmaker. Mr. Schoonmaker has returned after serving as city manager of Toledo for the last nine years. He was appointed chief engineer of the division of water for Toledo in December, 1937, when the design and construction of Toledo's Lake Erie water supply system was instituted. He continued as chief engineer of the project while serving as city manager. He has been a member of the advisory committee, Ohio Water Resources Board since November, 1944. Messrs. Downing, Swab and Williams have been principal members of the Jones & Henry organization for some years, during which time they have had responsible charge of many important projects. The firm will continue in consulting practice, specializing in sanitary engineering at the Security Building, Huron at Madison, Toledo 4, Ohio.

Philip M. Klutznick, former commissioner of the Federal Public Housing Authority, will head a committee to go to Israel to aid in developing a housing program there.

W. B. Munson has been named office engineer for the Vancouver, Wash., district of the Washington State Highway Department. He has worked with construction firms in Alaska for the last eight years, first on the Alcan highway and most recently at the Eilson Field Air Force Base near Fairbanks.

W. L. Turner, deputy county engineer of Stark County, Ohio, has resigned to become Division Four engineer of the Ohio Highway department, succeeding W. H. Moore, Akron. For three years, Turner has been in charge of sanitary engineering for the Stark County engineer's office at Canton.

E. W. Eggleston, Commissioner of Highways and Public Works of Tennessee, Nashville, has announced the following appointments: **Alva S. Noland** of Franklin, to be state traffic engineer at Nashville; and **P. P. Thomas** of Nashville, to be division maintenance engineer for the fourth division at Jackson. For the last several years Thomas has been office engineer for

Easy does it – with ADAMS

1 Positive Mechanical Control System Provides Fast, Accurate Blade Adjustments.

2 Push-Button Starting From Cab —Assures Quick, Easy Starting In All Weather.

3 Good Visibility Gives Operator Always Clear View of Blade and Work.

4 Efficient Steering Gear and Improved Front Axle Design Makes Steering Easy.

Easy operation in a motor grader involves both ease of physical effort and ability of operator to get blade adjustments wanted—quickly, positively—and then being able clearly to see work in progress. That's why the easy operating advantages of Adams Motor Graders (as shown above) are so important. Other advanced Adams features include generous blade clearances—high-arch front axle—convenient control levers—standing or seated operation. For complete information, see your local Adams dealer.

Adams

MOTOR GRADERS • LEANING WHEEL GRADERS • ELEVATING GRADERS

BATES • GRATES

fit into every plant picture

If yours is an application like this—with pipes, installations and stairways cutting into the area— BATES • GRATES *will give you neat, safe and strong open steel flooring.*

Here's where BATES • GRATES *win universal approval —where a series of stairways combine with short walkways. Safe and strong, plenty of light and ventilation all the way down.*

YOU can use BATES • GRATES for flooring any area or running any stairways. They serve to advantage in many ways: They are strong, safe, easy to maintain, durable, provide maximum lighting and ventilation.

The simple directness of BATES • GRATES engineering accounts for these advantages. The key is the Hex Cross bar fillet-welded to stout main bars.

For open steel flooring and stair treads in your plant . . . *Get a Bid from BATES*

for maintenance in the office of the state maintenance engineer at Nashville.

Stanley G. Phillips, formerly engineer of maintenance of way of the Maine Central Railroad and the Portland Terminal, has been promoted to chief engineer of the railroad and terminal. He is a University of Maine graduate, 1917. He started with the Lehigh Valley Railroad as a rodman and after service overseas with the U. S. Army Engineers, 1917-19, he returned to the Lehigh. In 1929 he was appointed track supervisor on the Central of New Jersey, and he joined the B and M in 1929 as assistant division engineer of the terminal division at Boston.

Allan Wagner, who has been public relations manager for the American Society of Civil Engineers since November, 1945, on March 15 becomes public relations director for the American Road Builders Association at Washington, D. C.

C. S. Mullen, chief engineer of the Virginia department of highways, recently completed 40 years continuous service with the department, for the last 24 years as chief engineer.

Franklin R. McMillan, Chicago, Ill., recently retired after 24 years with the Portland Cement Association. He received his civil engineering degree from the University of Minnesota in 1905. Until 1909 he was in railway engineering construction, building construction, and irrigation surveys. For a while he was on the faculty of the University of Minnesota. He joined the Portland Cement Association in 1924 and in 1926 became manager of the structural and technical bureau. In 1927 he became the association's director of research. He is still to serve the association in a consulting capacity.

D. B. Gumensky, for several years chief designing engineer of the National Hydroelectric Engineering Bureau in China, has terminated his work in that country because of conditions there and has returned to the United States. He has opened an office at 124 West Fourth St., Los Angeles, Calif., for general consulting practice, specializing in the hydraulic and structural fields.

Richard B. Gillette has retired as chief of the operations division of the Galveston, Tex., U. S. Army Engineers, to be succeeded by **Kenneth Heagy** of that office. During his 45-year career with the engineers, Mr. Gillette received several awards of merit.

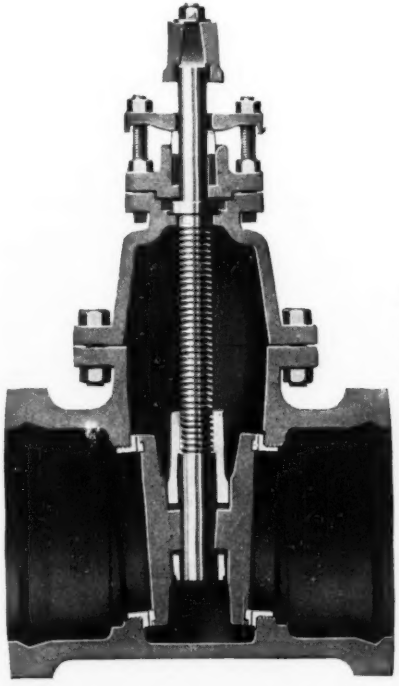
ARE YOU SURE OF YOUR GATE VALVES?

YOU
YOU
YOU

GATE VALVES are used so seldom you can't help feeling uncertain how they will work the next time. That's why cautious buyers base their choice on performance records.

And that's why an overwhelming number of them choose R. D. Wood Gate Valves. They know the reputation of these valves for long and dependable service. Only 3 moving parts to the internal mechanism—spreader and discs. The discs are free to rotate their full circumference when raised or lowered; they are not subjected to drag—and wear at any one point. In closing, pressure is evenly distributed at the center of the discs, which seats them tightly without distortion. No small parts to go wrong. No pockets to collect sediment. Unobstructed flow of water.

Send for complete details. Give your community the safety plus of R. D. Wood Gate Valves, proved in generations of use.



Seasoned castings. Rigidly inspected. For working pressures up to 175 lbs. Tested to 300 lbs. Conforming to AWWA specifications. Bell or flanged ends, or to connect with any standard type of joint. 2" to 30".

R. D. WOOD COMPANY

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of Mathews Hydrants and "Sand-Spun" Pipe (Centrifugally Cast in Sand Molds)

Gemmer Steering

is improving the performance of all types of

Self-Propelled Burden Bearers

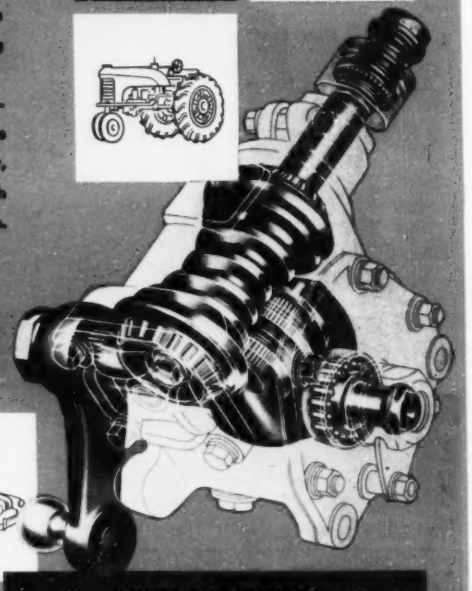
Trucks—road and factory—buses—tractors—road machinery—loaders—shovels—every wheeled power vehicle that carries a burden, needs Gemmer Easy Steering.

Gemmer Steering lightens the labor of operating. The Rolling Gear Tooth Sector and liberal use of antifriction bearings provide highest efficiency—smooth, easy transfer of power—abundant power for maneuvering or parking.

Inherent design banishes "lost motion." Steering is always firm, responsive and positive with absence of rubbery feeling or wander.

STRENGTH . . . DURABILITY . . . LOW MAINTENANCE—Alloy steel forgings avoid excess weight and bulk—provide plenty of strength and durability. A Gemmer Steering Gear, with reasonable care, will last the life of the vehicle with practically no maintenance. It is always reliable, trouble-free.

GEMMER MANUFACTURING COMPANY
6400 Mt. Elliott · Detroit 11, Michigan



MAKERS AND USERS OF POWER VEHICLES HAVE PREFERRED GEMMER STEERING FOR 42 YEARS

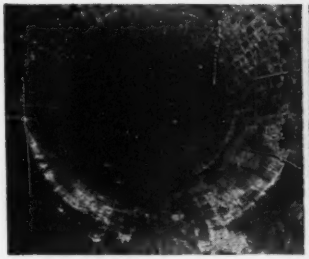
3743

Inspecting bank stabilization and revetment on the Lower Mississippi are, left to right, Wm. R. Harrison, chief of the river construction branch, Vicksburg District Corps of Engineers; John C. Goodrum, assistant chief of the management and technical information branch, and R. H. Haas, chief of the bank protection branch.

There'll be more candy in America when these men move on to another job. Working on an addition that will almost double the size of the Life Savers plant in Port Chester, N. Y., are Charles Lerro, and C. J. Robinson, respectively field engineer and superintendent for the White Construction Co. and Frank L. Jones, resident engineer for Lockwood Greene Engineers, Inc. Robinson has built reinforced concrete buildings since 1905, and Jones, a 1902 Harvard civil engineering graduate, has been a resident engineer for Lockwood Greene most of the time since 1916.

Ray Fullerton, resident engineer, and Frank Bachman, general superintendent, representing Kaiser Engineers, Inc., on the construction of a 52-mile railroad in the Salton Sea Basin of California used this method to get to work. The $3,800,000 railroad will transport iron ore for the Kaiser Co. steel mill in Fontana, Calif.

"GUNITE" RENEWS OLD BRICK SEWERS



These pictures show how we are rebuilding nearly four miles of combination sanitary and storm sewers at Bloomington, Illinois by lining them with mesh reinforced "GUNITE."

Erosion of mortar joints and dislodged bricks made many sections of these 65 year old sewers both dangerous and inefficient. The new "GUNITE" linings will restore them to greater than original strength and result in many more decades of useful service at a fraction of the cost of new sewers.

All work is done without opening streets. Sewer service is maintained by installing temporary flumes or by-passing through relief sewers.

This job and many other profitable uses of "GUNITE" are illustrated and described in our new 84-page General Bulletin A2400. Send for your free copy today.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA. U.S.A.
MANUFACTURERS OF THE CEMENT GUN

WALKING IS SAFER
on Hendrick Shur-Site Treads

IDEAL for stairs, ladders and fire escapes, because the square-edge, uniformly spaced steel bars of Hendrick Mitco construction provide a non-slipping, level walking surface, and have no angle irons, bolts or rivets to collect dirt and refuse, or obstruct light and ventilation.

A heavy, flanged nosing-bar makes the edge of each tread clearly visible — an additional safety feature — and also provides reinforcement where the load is greatest. Write for booklet on Hendrick Mitco Products.

SEE OUR CATALOG IN SWEET'S

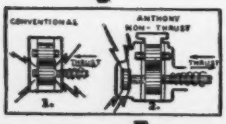
HENDRICK
Manufacturing Company
45 DUNDAFF STREET, CARBONDALE, PENNA.
Sales Offices In Principal Cities

Perforated Metals
Perforated Metal Screens
Architectural Grilles
Mitco Open Steel Flooring,
"Shur-Site" Treads and
Armorgrids

what makes some dump trucks last longer?

Roller Bearing PUMP with the NON-THRUST feature

ADDS UP TO 700% TO THE LIFE OF ANTHONY DUMP TRUCKS



THE HEART of a dump truck—the pump—plays as important a part in the operation of a dump truck as your heart does to you. And when the pump fails, the hoist fails and the truck stops working. That is why Anthony engineers place such emphasis on the pump. The amazing patented "NON-THRUST" design of the Anthony roller-bearing pump is found in no other hoist at any price. Unlike conventional pumps, its design eliminates the No. 1 cause of pump failure — destructive mechanical thrust on the gears. (See drawings below.) Large roller bearings, extra thick reversible bronze wear plates, pressure lubricated idler gear bearings and precision finished steel gears are other features that give this pump an unequalled field performance record. For *dependable service* DEPEND ON ANTHONY HYDRAULIC HOISTS with the "NON-THRUST" Pump.

ANTHONY HYDRAULIC

ANTHONY CO.
STREATOR, ILL.

Stang WELLPOINT SYSTEM

For KNOW-HOW • ENGINEERING • SUPERVISION • EQUIPMENT • to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

JOHN W STANG CORPORATION
2 Broadway, New York 4, N. Y.
8221 Atlantic Ave., P.O. Box 631, Bell, Cal.

J. J. Russell, general supervisor of construction for Central Mortgage and Housing Corporation, is resigning to return to private practice. He has been responsible for the construction of 24,000 homes and another 11,000 projects under way.

Fred Wemple of Midland, Tex. has been appointed chairman of the Texas Highway Commission to succeed **John S. Redditt**, resigned.

Newly-appointed division engineers of the Ohio Highway Department are: Division 1, Lima—**Walter J. Neidhardt**, Spencerville, succeeding **C. C. Kohli**, Lima; Division 2, Toledo—**George M. Lieber**, Fremont, succeeding **Wilfred B. Robison**, Toledo; Division 3, Ashland—**Joseph A. Tomsic**, Lorain, to succeed **H. W. Mittendorf**, Ashland; Division 5, Newark—**K. L. Rothermund**, Newark, succeeding **F. B. Chappelear**, Zanesville; Division 7, Sidney—**Howard R. Craig**, Wapakoneta, succeeding **Oliver M. Liggitt**, Quincy; Division Four, Ravenna—**W. L. Turner**, **Canton**, deputy **Stark County** engineer, to succeed **W. H. Moore**, Ravenna; Division Twelve, Cleveland—**Louis L. Drasler**, Cleveland, succeeding **E. W. Chadeayne**; Division Six, Delaware—**Octave Ammon**, **Columbus**, to succeed **R. W. Werner**; Division Eight, Middletown—**Joe Unger**, Dayton, acting chief engineer to succeed **J. A. Goldschmidt**; Division 9, Chillicothe—**Joseph N. Doyle**, Waverly, succeeding **Elmer S. Barrett**, Chillicothe; Division 11, New Philadelphia—**Dawson Smith**, Dover, succeeding **Edwin M. McCullough**, Cadiz.

A. C. Lauer, **A. G. Swett** and **F. Grainger Pierce**, Charlotte, N. C., have formed the General Engineering Co. of Charlotte, to conduct a general engineering business.

Employment of **Jack Jetton, Jr.** as construction engineer of the State Highway Department's district office in Memphis, Tenn., is announced. **J. N. Midyett** of Union City is succeeded by **Newman Glover** of Newbern as district maintenance engineer in a west Tennessee district embracing Obion County.

All engineering operations of the Toledo, Ohio, water division have been consolidated under **Owen Clark**, engineer of construction.

William R. Seeger, assistant chief engineer of the Marin Municipal Water District, San Rafael, Calif., has been promoted to assistant general manager.

Pittsburgh Steeltex Floor Lath

gives you both

Form and Reinforcement

The placing of floors moves swiftly, smoothly and at a big saving in time and material with Pittsburgh Steeltex Floor Lath. This combination of form and reinforcement for concrete and gypsum floors and roofs eliminates the need for slow, costly form-work.

Pittsburgh Steeltex Floor Lath is a combination of a uniformly spaced welded wire mesh laced to a waterproof cord-reinforced backing. The lacing wires are crimped to permit separation of the backing which gives you automatic imbedment from the weight of the mix. The waterproof backing holds the water in the mix so that it must evaporate slowly which gives maximum strength and assures proper curing of the slab. This also minimizes drip, prevents loss of cement and eliminates cleanup expense.

For better floors and roofs use Pittsburgh Steeltex Floor Lath—it will save you time and money. See our catalog in Sweet's or write for your copy of D.S. 133 to Pittsburgh Steel Products Company, Department EN, Pittsburgh 30, Pennsylvania.

PITTSBURGH STEEL PRODUCTS COMPANY

A Subsidiary of Pittsburgh Steel Company

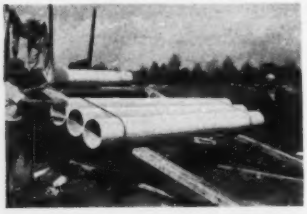
Pittsburgh 30, Pa.

Engineering Facts about
Johns-Manville TRANSITE PRESSURE PIPE
Installation Economies

SINCE the cost of installing the transmission and distribution lines may represent as much as 30 per cent of the total original investment in a water supply system, it is important that these costs be kept to a minimum. Transite* Pressure Pipe offers a combination of installation advantages which have resulted in substantial economies wherever this pipe has been used.

These installation economies start when a Transite Pipe shipment is received. Because Transite is relatively light in weight, unloading and all subsequent handling operations are simplified. More footage can be handled per truckload, trucking costs are lower, and distribution on the job site is easier and more quickly accomplished.

Mechanical handling equipment is not usually necessary except where the larger diameters of pipe are used. The sections of pipe are easily lowered into the trench, either by hand or with the aid of rope slings.



All but the larger diameters of Transite Pipe are unloaded without mechanical equipment and lowered into the trench with slings. Lightness, ease of handling and ready workability contribute to Transite Pressure Pipe's many desirable installation advantages.

In this Transite installation at Long Beach, California, the pipe was laid as fast as the trench was opened. Not more than two newly laid lengths of pipe were ever exposed at one time.

Transite's factory-made Simplex Couplings provide a number of additional installation economies.

Consisting of only three simple parts, this coupling is rapidly assembled to provide a tight, yet flexible joint. A coupling puller is the only tool required for assembly. So rapidly can the pipe be assembled in the trench that the same foreman often supervises both excavation and installation. And this speed of assembly means that trenches need be open only a minimum length of time.

Each joint, moreover, is readily checked for correct assembly as the pipe is laid. This provides advance assurance that the line will meet final test requirements and is a further help in expediting completion of the job.

The flexibility of the Transite Simplex Coupling affords another advantage. It permits deflections up to 5° at each joint, thereby allowing the pipe to be laid around wide curves and across hilly terrain without the use of special fittings.

The workability of this pipe is also a contributing factor to its economy of installation. Transite is adapted to standard water works practice and is readily connected to valves, fittings, hydrants, etc. It is tapped and drilled with standard equipment. The threads are sharp, clean and strong—connections are tight and lasting. Conventional methods are used for making large service connections.

For further details about Transite Pressure Pipe, write Johns-Manville, Box 290, New York 16, N. Y.

Assembling Simplex Couplings is a quick operation. And each joint can be easily checked for proper assembly when it is made, providing advance assurance that the line will meet final test requirements.

JOHNS-MANVILLE JM PRODUCTS

*Transite is a Johns-Manville registered Trade Mark

Elections and Activities

Robert W. McChesney, president of the National Electrical Contractors association and H. E. Foreman, managing director of the Associated General Contractors of America, both of Washington, D. C. have been appointed to the federal committee on apprenticeships.

J. T. Hood, General Electric Co., Portland, has been elected president of the Professional Engineers of Oregon, succeeding Carl Green. Other new officers are J. A. Corenbaum, Pacific Telephone & Telegraph Co., Portland, vice-president, and R. C. Shoemaker, Willamette Hyster Co., Portland, treasurer.

The Mobile, Alabama Engineers Club has asked the city commission for a new building code. The engineers claim the old code is too restrictive as to materials and methods, does not provide enough fees to support a sufficient city building inspection staff, and cannot properly safeguard public safety and health.

Albert Deermont has been elected president of the Florida Road Builders' Association. Other officers are John R. Phillips, vice-president and J. H. Dowling, re-elected secretary-treasurer.

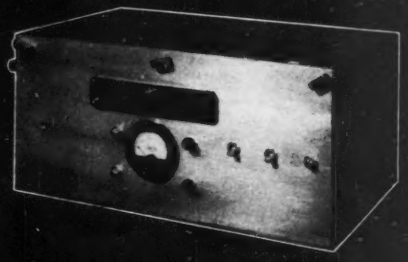
Wylie W. Gillespie of Jacksonville has been elected chairman of the Florida Section, American Waterworks Association. He succeeds W. A. Glass of Miami. Other officers are S. K. Kellar, vice-chairman; A. E. Williamson, secretary; Charles A. Black, chairman of the membership committee; M. R. Boyce, Clifford E. Earls, and S. W. Wells, board of trustees.

Baxter Wade, Jackson, Miss., has been elected president of the Alabama-Mississippi Section of the American Waterworks Association, succeeding Arthur N. Beck, Montgomery, Ala.

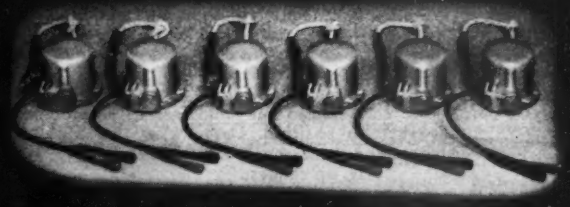
New officers of the Seattle, Spokane and Tacoma, Wash., sections of the ASCE are: Seattle—E. L. Strandberg, consulting engineer, president; George I. Teufel, contractor, vice-president; Robert O. Sylvester, assistant professor of civil engineering at the University of Washington, secretary; James H. Reid, with a consulting engineering firm, treasurer. Spokane—L. Vaughn Downs, Bureau of Reclamation, president; Allen S. Janssen, dean

Century

PORTABLE REFRACTION SEISMOGRAPH



For use where first arrival information only is needed. Designed specifically for accurate determination of water table or depth of bed rock for dam sites, buildings and other major construction projects. Applicable for sounding of ice depth and other geophysical exploration purposes. Units consist of Century Portable Oscillograph, Attenuator Panel in all-aluminum case and six Seismometers. All units are waterproof and designed for portability.



Write for detailed information applicable to your particular problems.

ANOTHER Century PRODUCT

Century GEOPHYSICAL CORPORATION
TULSA, OKLAHOMA
149 Broadway New York

Save TIME AND MONEY BY USING THE Safety-Engineered

M·S·A VELOCITY-POWER Driver

- SELF-CONTAINED
- PORTABLE
- EFFICIENT
- NO RECOIL
- FLASHLESS
- EASY TO USE
- WEIGHS ONLY 4½ POUNDS

This modern self-powered Tool gives you speed, safety and dependability in anchoring conduits, attaching ductwork, hanging pipe or conveyor brackets to steel or concrete! The M.S.A. Velocity-Power DRIVER is the only powder-actuated tool employing an integral stud and piston which remain fastened together until the stud is imbedded — preventing ricochet, flash, recoil or disturbing noise.

• Driver cannot operate unless safety arm is rotated and held in position. Demonstrations? Gladly, on request.

WRITE FOR BULLETIN TA-15.

M·S·A

MINE SAFETY APPLIANCES COMPANY

Braddock, Thomas and Meade Streets · Pittsburgh 8, Pa.

At Your Service: 54 BRANCH OFFICES IN THE UNITED STATES AND CANADA

of the College of Engineering at the University of Idaho, first vice-president; William A. Hill, Washington Water Power Co., second vice-president; J. Byron Barber, with a consulting engineering firm, secretary-treasurer. Tacoma—Arthur Johnson, district engineer for the water and power division of the conservation branch, U. S. Geological Survey, president; John S. Abel, chief engineer, Weyerhaeuser Timber Co., vice-president; Fred D. Langdale, bridge design engineer, state highway department, secretary-treasurer; Arthur M. Buell, assistant bridge engineer, state highway department, director.

Builders Exchange of Columbus, Ohio, has elected M. R. Hausman president, Ralph H. Anderson, first vice-president; C. Curtiss Inscho, second vice-president; and John A. Kight, renamed to a 28th term as secretary-treasurer. Directors named for one-year terms are Glenn C. Grant and F. M. Peart; and for two-year terms, James A. Visintine, Donald F. Morris, Frank J. Lorenz, and John E. Werner.

Bruce W. Weaver, Warren, Ohio, civil engineer and surveyor, has been elected president of the Ohio Society of Professional Engineers, Mahoning Valley chapter, succeeding E. J. Salvidge. Other officers are Albert Coope, vice-president; Harold E. Husted, secretary; Harold P. Syfer, treasurer, and Regner Nielsen, Robert A. Williams, and Donald L. Bostwick, directors.

Utica chapter, New York State Association of Highway Engineers, has elected president, Jay Carncross; vice-president, Jerome E. Burdick; secretary-treasurer, E. Mercer Weiskotten; state director, John S. Hadala.

Virginia Road Builders officers and directors for 1949: Alvin H. Hechler, president; T. E. Ritter, vice-president; and Archer B. Gay, secretary-treasurer. Directors G. P. Clay, J. R. Ford, W. B. Adams, A. B. Torrence, W. N. Jackson, E. V. Williams and W. J. Hardy. Sterry Mahaffey continue as engineer-director.

Mike Dougherty has been elected president of the Memphis, Tenn., Branch of the Associated General Contractors, Sol Lipman, vice-president and W. W. MacLaughlin, Jr. secretary-manager.

Frederic G. Krapf was re-elected president of the Delaware Chapter, Associated General Contractors of America, for his third consecutive term. Other officers P. C. Van Sant, first vice-president; John Dangel, sec-

ond vice-president; Charles Eckman, secretary; Dominick M. Fontana, treasurer, and Francis E. B. McCann, manager.

I. C. Steele has been elected 1949 president of the Engineers Club of San Francisco. Other officers: Lawrence B. Wright, vice-president; J. A. Polhemus, Jr., secretary, and F. E. Bonner, G. W. Aljian, and E. S. Warner, directors.

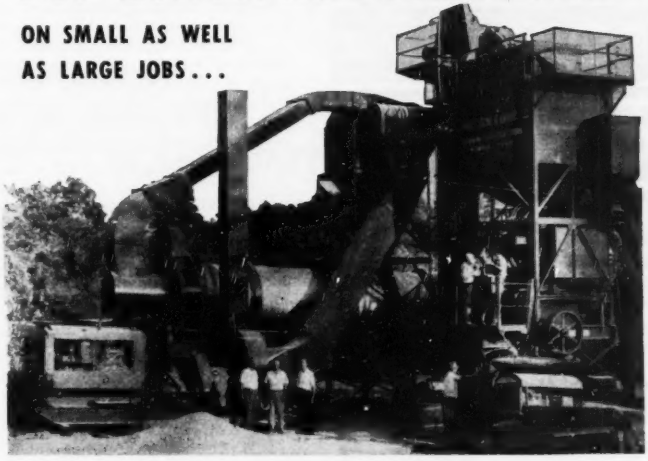
The Engineers Club of Seattle, Wash., has elected O. Ingalls Hall president, with B. A. Travis, vice-president, W. G. Carr, treasurer and E. K. Blackford, secretary. New trustees are Marius Anderson, P. N. Royal and W. J. Royea.

Carl F. Pflugmacher has been installed as president of the Engineers Club of Tacoma, Wash., Walter J. Ryan first vice-president, Clyde Murray, second vice-president, David Countryman, secretary-treasurer and W. D. Smith executive committeeman.

New president of the Associated General Contractors of Idaho is W. R. Cahoon, Pocatello. Serving with him is Duffy Reed, Jr.; vice-pres.

For Efficient Production

ON SMALL AS WELL AS LARGE JOBS...



H&B Model PA Portable Asphalt Plants

MOTO-PAVER

The complete mixing and paving machine for mixed-in-place work. Write for Bulletin MP-47.

Shown above is the Hetherington & Berner PA-30 hot mix plant recently delivered to Memphis Stone & Gravel Co., Highway Contractors, Memphis, Tenn. These PA plants are designed to give efficient production on small as well as large jobs—under a wide variety of operating conditions.

PA plants may be driven with individual motors or from one main power unit for the tower and one for the dryer, using gasoline, diesel, diesel electric or electric power. They are easily portable by truck. Low overall height is maintained by using a flat screen, and can be further reduced by use of a depressed driveway. Write for Bulletin P-46.

HETHERINGTON & BERNER, INC.
730 Kentucky Avenue, Indianapolis 7, Indiana

H&B Builds Portable and Stationary Asphalt Plants of All Types, Sizes and Capacities

A "MUST" for every Engineer's Library

Jan. 1949
147 pages
5¾" x 8⅛"

$1.50

MODERN TIMBER ENGINEERING

...a practical and authentic presentation of fundamental principles of TIMBER engineering. It contains solutions to practical design problems... a useful guide for the practicing engineer and architect.

11 CHAPTERS OF HELPFUL INFORMATION

I Structure and Characteristics of Wood.
II Strength Properties, Loads and Stresses.
III Fastenings.
IV Beams.
V Columns.
VI Trusses.
VII Decks and Bridge Floor Systems.
VIII Glued Laminated Lumber.
IX Round Timber Piles.
X Wood Preservatives.
XI Fire Resistance of Wood Construction.

Also 55 pages of examples, in addition to 22 pages of charts and tables in Appendix.

SOUTHERN PINE ASSOCIATION
Canal Building, New Orleans, Louisiana

Please send me_____copies of MODERN TIMBER ENGINEERING at $1.50 per copy.

Name of firm_____

By_____

Street Address_____

City_____State_____

Learning Your Clutch Needs
Improve YOUR Product with
Automotive and Aircraft
Analysing the Problem
OVER
Trucks and Busses
Designing the Clutch
Tractors and Road Machines
Planning Production
CENTER
Farm Machines and Implements
Tooling Up
ROCKFORD
Oil Field Rigs and Pumps
Manufacturing
CLUTCHES
Industrial
Checking and Testing
If you are looking for a better way to transmit and control power within your product — an easy solution is to let our engineering department give you the benefit of their long, specialized experience in this field. Just send us a print of your design, with necessary specifications. We will submit a confidential analysis and a recommendation for a ROCKFORD CLUTCH application that will improve the operation of your product.
Mowers and Light Machines
Supervising Installation
Engines and Marine Units
Servicing
Machine Tools Production Units
ROCKFORD CLUTCH DIVISION
BORG-WARNER
333 Catherine Street Rockford Illinois

DRILLING CONTRACTORS

DIAMOND AND SHOT CORE BORINGS — DRY SAMPLE BORINGS

Foundation Testing for Bridges, Dams and all Heavy Structures

Also

Manufacturers of Diamond and Shot Core Drills, Accessories and Equipment

SPRAGUE & HENWOOD, Inc.

Scranton, Pa. Dept. E, U. S. A.

"GUNITE" CONCRETE (Since 1915)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING.

GUNITE CONCRETE & CONST. CO.
1301 Woodswether Rd., Kansas City 6, Mo.

District Branch Offices

R. N. Turner, Dist. Mgr., 228 No. LaSalle St., Chicago 1, Ill. B. H. Mueller, Dist. Mgr., 6625 Delmar Blvd., University City, (St. Louis), Mo. Philip D. Barnard, Dist. Mgr., 2036 Addison, Houston 5, Tex.

Branch Offices: Denver, Dallas, New Orleans

See our catalog in Sweet's

Falls, vice-president; L. D. Robbins, Boise, secretary-treasurer; and C. B. Launch, E. L. Lessinger and W. Curtis, all of Boise, and L. L. Wheeler of Pocatello, directors.

A new A.G.C. chapter has been formed at Spokane, Wash., by builders who formerly belonged to the Spokane chapter, now devoted exclusively to contractors in heavy construction. R. W. Meighan of the Central Construction Co. is the first president of the new group, known as the Inland Empire chapter. J. L. Hazen of Hazen & Clark is vice-president; Henry George, Jr., of Henry George & Sons, secretary-treasurer; and H. Halvorson of H. Halvorson, Inc., and Harry Roblee of the Gus J. Bouten Co., directors.

Gilbert Stein, Chattanooga, has been elected president of the Tennessee branch, Associated General Contractors of America, succeeding Grover Estes of Memphis. Other officers: Blair Shannon, Johnson City, vice-president; J. A. Kelly, Nashville, treasurer, and Robert L. Alexander, Nashville, secretary.

Lynn Perry, consulting engineer for the Miami, Fla., Sewer and Water Department, has been elected president of that city's section, ASCE, succeeding Edmund Friedman. W. C. Gorman was re-elected secretary-treasurer.

John B. Watson is president of the Greensboro, N. C., Engineers Club. Other officers: F. O. Gibbs, vice-president; Bruce D. Hodges, secretary; C. O. Lowe, treasurer; and Carroll Martin and Edward Lowenstein, directors.

Officers of the Associated General Contractors of West Virginia, Inc., are H. W. Schneider, of Parkersburg, president. Leo Vocellio, J. D. Higginbotham, Ray E. Ritchie, and Walter Seabright, vice-presidents; and W. E. Abbitt, secretary-treasurer.

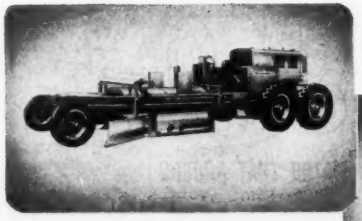
Prof. H. B. Blodgett, dean of the civil engineering school of the University of Nevada, has been elected president of the Reno Engineers' Club. Other officers: Fred Clayton, vice-president; Henry J. Isbell, secretary-treasurer, and Edward S. Parsons, and E. W. McKenzie, the out-going president, directors.

Ernest D. Francis, structural engineer of Sacramento, Calif., has been elected president of the Structural Engineers Association of Central California. W. H. Peterson is vice-president, and W. A. Wassum, A. H. Brownfield and R. W. Hutchinson have been named directors.

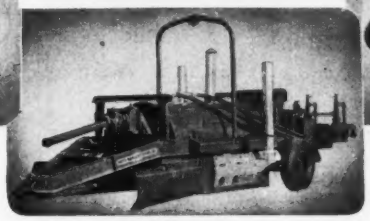
WOOD ROADBUILDING EQUIPMENT

First again in '49

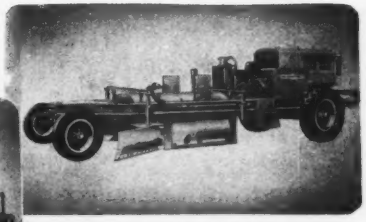
ROADMIX MACHINES



MODEL 42
Self-Propelled



MODEL 54
Tractor-Drawn



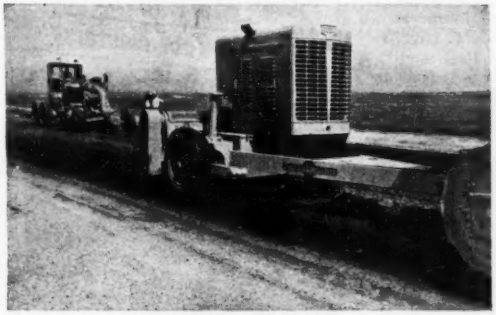
MODEL 36
Self-Propelled

- ***NEW DESIGNS***
- ***MORE ECONOMIES***
- ***INCREASED POWER***
- ***LARGER CAPACITIES***

WANT BETTER ROADS AT LOWER COSTS?

These machines produce a thorough complete mix in one pass at the lowest costs per ton. For mixing stabilized bases and wearing courses with any type of binder. Capacities from 100 to 350 tons per hour. Lowest initial cost and lowest upkeep cost, yet they produce the best quantity and quality.

THE PREPARIZER — A HEAVY DUTY PULVERIZER



P-600 with Motor

PT-600 Tractor Powered

These machines pulverize the old asphalt wearing surfaces making it possible to reuse that select aggregate for base material or the new wearing surface. For soil blending work they have no equal.

Write for details

WOOD MANUFACTURING CO.

6900 Tujunga Avenue **P. O. Box 620** **North Hollywood, Calif.**

FOR 60 YEARS TOP ARTISTS, ARCHITECTS, ENGINEERS HAVE AGREED THAT

KOH-I-NOOR!

is first.....

•FIRST DRAWING PENCIL MADE IN 17 DEGREES - 6B to 9H.!
•FIRST IN PERFORMANCE.!
•FIRST IN UNIFORM QUALITY.!

Why KOH-I-NOOR? Because it's professionally designed, and manufactured by the most modern type of machinery to meet the most exacting requirements. Uniform, accurate grading in all 17 degrees. Long Wearing. Unsurpassed Breaking Strength. Opaque (Perfect Reproduction)

•Ask For #1500 –

L. & C. HARDTMUTH, INC. "KOH-I-NOOR" 1500 2H

NEWS BRIEFS

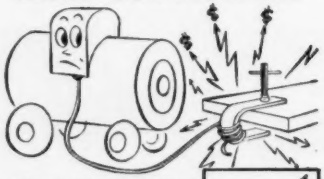
(Continued from page 70)

Bridges—Construction of a $2,500,000 bridge across the Patuxent River between CHARLES and CALVERT counties, Maryland, has been approved by Gov. W. Preston Lane Jr. . . . Maj. J. R. Grant, consulting engineer, has been appointed by VANCOUVER, B. C., to prepare drawings and compile information for the new 8-lane Granville St. bridge across False Creek, Vancouver. The structure is estimated to cost more than $7,000,000.

Labor—Heavy construction workers in western WASHINGTON and ALASKA have been granted an increase of 13 cents an hour . . . Wage increases will be sought by all nine building crafts affiliated with AFL in NORTH DAKOTA . . . Structural iron workers in YOUNGSTOWN, OHIO, have gone back to work at $2.25 an hour, with a promised early increase to $2.50, and by May 1 next to $2.37½ the same as CLEVELAND iron workers are getting . . . A 37½-cent hourly wage increase is being sought by the AFL carpenters' union for 5,000 members in CLEVELAND, OHIO. Present rate is $2.37½ . . . AFL building trades unions in ROCHESTER, N. Y. have signed contracts to get carpenters and floor layers $1.70; and composition roofers, $2.10 an hour . . . Plumbers and steamfitters at KOKOMO, IND., got a 15-cents-an-hour increase . . . 200 roofers in the ST. LOUIS, MO., area, have gone on a strike in an effort to get $2.42½ instead of $2.12½ an hour . . . Journeymen plumbers at MEADVILLE, PA., have returned to work after a four months strike. They will get $2.07½ an hour . . . Wage increases of about 25 cents an hour for basic trades in the construction industry of MILWAUKEE, WIS., have been proposed by representatives of seven AFL unions . . . Bricklayers' Local No. 3, KNOXVILLE, TENN., will increase its scale from $2.25 to $2.75 an hour, effective April 1.

Public Construction—The Canadian government is considering the erection of a 15-story office building at EDMONTON, ALTA., to cost about $4,500,000 . . . Legislature of QUEBEC has voted $4,000,000 for drainage and $4,000,000 for provincial office buildings . . . School facilities and housing units at the atomic weapons center at LAS ALAMOS, N. M., will cost over $13,000,000, and contracts for 12 more projects will be let soon . . . Construction of the Baytown-LaPorte tunnel at SPILLMAN ISLAND, TEX., will begin

STOP WELDING LOSSES with TWECO CABLE CONNECTIONS



WATCH THAT GROUND
If it's hot, your profits are leaking away — you need
TWECO REDHEAD Ground Clamps

Write for Tweco Catalog No. 7 giving data and prices on the complete TWECO line of electrode holders, ground clamps and cable connections for electric welding.

Tweco PRODUCTS COMPANY
MANUFACTURERS OF ELECTRODE HOLDERS • GROUND CLAMPS • CABLE CONNECTIONS FOR ELECTRIC WELDING
ENGLISH AT IDA • WICHITA 1, KANSAS

Always on the Road
HAUCK
Melting Kettles
Asphalt Tool Heaters
Asphalt Surface Heaters
Road Oil Distributor Burners

Hauck Asphalt Tool Heater and Melter for Binder Cement.

Speed Master Melting Kettle for Asphalt and Tar.

For road paving or repair work, Hauck Oil Burning Tar and Asphalt Melting Kettles, Tool Heaters and Burners are recognized the best for tough service and ready portability. Prompt shipment of any type or size you need. Write for Highway Construction and Maintenance Catalog.

HAUCK MANUFACTURING CO.
150-160 Tenth St. Brooklyn 15, N. Y.

in a few months . . . The school board of SAN DIEGO, CALIF., has drawn up a $14,270,000 school building program . . . U. S. Public Buildings Administration proposes a $20,500,000 federal building in BOSTON, MASS. . . . Work is to start soon on a $5,575,000 federal office building at NASHVILLE, TENN. . . . The Corps of Engineers has awarded contracts aggregating nearly $4,500,000 for buildings at LADD FIELD, FORT RICHARDSON and WHITTIER, ALASKA, while the Alaska Native Service announced bids will be called soon for a $10,000,000 hospital at ANCHORAGE. . . . The UNIVERSITY of PITTSBURGH, PA., has broken ground for a field house, launching its $19,450,000 building program. Eight buildings are to be erected. . . . PENNSYLVANIA STATE COLLEGE will take bids soon on three men's dormitories to cost near $4,000,000 . . . The Navy Department says work on the $22,750,000 aeronautical turbine laboratory at TRENTON, N. J., will start this year . . . Plans are being prepared for a $4,000,000 state office building at FRANKFORT, KY. . . . Comprehensive recommendations for flood control and drainage in the WHITE RIVER drainage basin are being made by the Indiana Flood Control and Water Resources Commission. In the meantime, the Corps of Engineers has begun a survey of what INDIANA needs to prevent recurrence of heavy floods . . . City council of BOSTON, MASS., has approved a $30,000,000 Massachusetts legislative act for the demolition of the elevated railway structure from Essex to Dudley Sts., the construction of a Shawmut Ave. subway replacement, and enlargement of the Park Street-Scollay Square subway stations . . . The John McShain Const. Co., Philadelphia, Pa., will build the General Accounting office building in WASHINGTON, D. C., for $21,572,000. Ten escalators and 12 elevators will be constructed by Westinghouse Electric Corp., Jersey City, N. J., for $1,384,999.

Water Supply and Sewers—The biggest sewer project of recent years in INDIANAPOLIS, IND., is now under way. It consists of the $1,500,000 E. 34th St. main sewer and the $500,000 E. 37th St. main sewer . . . YAKIMA, WASH., is studying a water system improvement including a $400,000 filtration plant, a $1,000,000 pipeline and two $300,000 reservoirs . . . ROANOKE, VA., has authorized the first units of a $750,000 sanitary sewage disposal plant . . . FORT WORTH, TEX., has approved bond issues of $12,400,000 for water and $5,600,000 for sewers . . . The Corps of Engineers describes LAKE OKEECHOBEE, capable of storing a million acre-ft. of water, as the heart

WHITCOMB 8-ton Diesel locomotive pushes two loaded ore cars onto dumping platform on huge tunnel project where five Whitcomb Diesels were employed for fast, economical haulage.

WHITCOMB LOCOMOTIVES

FIRST CHOICE FOR IMPORTANT CONTRACTS

Whitcomb Diesel locomotive pushes ore cars into mouth of tunnel.

Ten 2 meter capacity loaded ore cars are withdrawn by this small but powerful Whitcomb Diesel.

WHITCOMB Diesel locomotives are first choice for important, difficult jobs—offering the low maintenance cost, the dependability, the stamina, the speed needed to assure completion of a job on schedule.

Many contractors amortize the cost of a fleet of Whitcomb Diesels on a single large job, and do so at a profit. Yet, these Whitcomb Diesels are built to give years and years of service. That service frequently calls for a gruelling 24-hour a day schedule under the most difficult conditions.

WHITCOMB Diesel locomotives are individually engineered to meet the haulage requirements of a specific contracting job—designed to be an integral part of a total engineering plan.

Write today for complete information.

Diesel mechanical locomotive from 3 to 30 tons.

Diesel electric locomotives from 25 to 95 tons.

THE BALDWIN LOCOMOTIVE GROUP

THE WHITCOMB LOCOMOTIVE CO.

PARK & RECORD STS. ROCHELLE, ILL.

Subsidiary of THE BALDWIN LOCOMOTIVE WORKS

THIS ONE FACT TELLS YOU MORE ABOUT ATLAS SPEED FORMS THAN ANYTHING WE CAN SAY!

OF ALL THE CONTRACTORS WHO RENTED ATLAS SPEED FORMS IN A 12 MONTH PERIOD

92% BOUGHT THE FORMS THEY RENTED

True, we have a liberal rental purchase plan—at any time within 60 days the rental fee can be applied against the purchase price but that's not the story.

Here were 300 experienced contractors, pouring concrete, working in a competitive market, faced with the same sort of costs, time and labor problems that you meet.

These 300 contractors actually tested Atlas Speed Forms right on the firing line. They found out for themselves that multiple re-use brings form costs down to 1¢ per contact foot per use. They found out for themselves that form labor costs are cut in half. They found out for themselves how quick and easy it is to erect and strip Atlas Speed Forms. They found out that they make more money when they use Atlas Speed Forms for poured concrete.

These 300 contractors sold themselves on Atlas Speed Forms by actually using them. Don't you think you should at least find out how they can save time and money for you? How they can eliminate a good many of your headaches?

Send in the coupon and we'll send a data sheet and give you a form estimate and more detailed information.

Sears, Roebuck building, Dayton, O. Hillsmith Co., contractors.

Mail inquiries to Irvington Office.

SALES OFFICES
BOSTON, MASS. 294 Washington Street
DENVER 2, COLORADO 1600 West Colfax Ave.
HOUSTON, TEXAS 3815 Garrott Street
MIAMI, FLORIDA 93 N.E. 20th Street
NASHVILLE 3, TENN. Amer. Natl. Bank Bldg.
PHILADELPHIA, PA. Broad St. Station Bldg.
SAN FRANCISCO, CAL. Sixth and Hooper Sts.
TACOMA, WASH. 2412 N. 10th Street
WASHINGTON, D.C. 805 G Street
NEW YORK, N.Y. 43 Cedar Street

So light a child can lift them

IRVINGTON FORM & TANK CORPORATION
IRVINGTON 74, NEW YORK

Please send me information on Atlas forms. I am particularly interested in forms for Walls ☐ Floors ☐ Tunnels ☐ Bridges ☐ Sewers ☐ Columns ☐

NAME _____
FIRM _____
ADDRESS _____

*ATLAS SPEED FORMS are standard forms for pouring concrete walls, floors, and foundations. Also for bridges, tunnels, caissons, pipes, sewers.

of the Florida flood control project . . . Youngstown, Ohio, is studying a $10,000,000 sewage disposal project . . . Contracts have been let for a new water reservoir, pipeline and treatment plants at Corbin, Ky., for a little under $1,000,000 . . . An increased water rate has been proposed at Miami, Fla., to help finance a new water supply, including a proposed $3,100,000 treatment plant . . . Drury, McNames & Porter, Ann Arbor, Mich., consulting engineers, have surveyed the water needs of Fort Wayne, Ind., and suggested a $7,000,000 rehabilitation . . . Muncie, Ind., is planning for a large addition to its sewage disposal plant and more sewers for new territorial additions to the city.

ALSO RECORDED

Expensive Rats—"There is a rat for every man, woman and child in the world, and it costs everyone of us $20 a year for what our rat eats and destroys," say Leroy W. VanKleeck, principal sanitary engineer of the Bureau of Sanitary Engineering, Connecticut State Department of Health.

Gritty Records—A suit to restrain the F. W. Case Engineering Construction Co., Van Nuys, Calif., "from applying cement and gravel in their construction operations by methods which permit pollution of the air" has been filed in a Los Angeles Superior Court by the Century Records Co., which asked for $35,000 damages and an injunction, claiming its disk making business had been ruined by fine cement dust. It is said that the dust had gotten into recording machinery and master records, making it necessary to suspend operations. The construction company said that gunite was applied to a warehouse being built next door to Century Records, and that the diskmakers failed to close windows and ventilators during the operation.

Hot Foot for Pigeons—According to the American Public Works Association, pigeons, starlings or any other winged public nuisances that alight on the eaves of the state education building in Albany, N. Y., will get an electric hotfoot. To end a nuisance that long has bothered persons working in the building, the state installed an electronic pigeon evictor which consists of three parallel wires laid along the flat surface where the birds roost. Every three seconds an electrical impulse—not strong enough to kill the birds but uncomfortable enough to make them move on— is sent through the wires.

NOW! FREEDOM IN FLOWMETERING

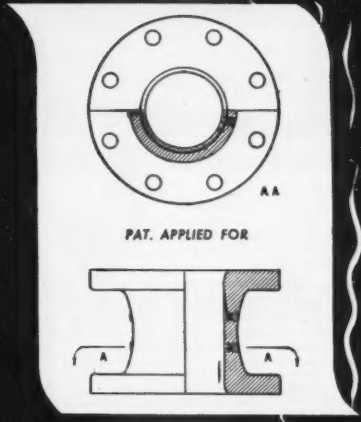
NEW BETHLEHEM FLOW TUBE

(Gentile Patents)

NO STRAIGHT RUN LIMITATIONS
NEGLIGIBLE RESISTANCE TO FLOW

A constant coefficient over 8:1 range of discharge, higher accuracy, more economy, greater range—these are some of the advantages of the new BETHLEHEM FLOW TUBE. Tested by one of the nation's leading hydraulic laboratories, it consists essentially of a short, straight length of pipe equipped with two groups of pressure nozzles around the inner periphery—one group pointing upstream, the other downstream. The nozzle groups are interconnected by common pressure rings from which connections are made to the high and low pressure sides, respectively, of a standard flow meter.

To measure fluid flow rate with greater accuracy . . . more economy . . . investigate this new primary element now! Write for your copy of the folder, "Bethlehem Flow Tube," today.



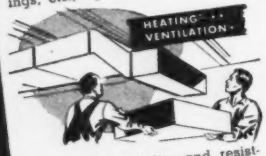
BETHLEHEM FOUNDRY
& MACHINE COMPANY • BETHLEHEM • PENNA.

ZINC
SERVES YOU

Galvanizing (Zinc coating) insures long-time, low-cost service. For as long as iron or steel is coated with Zinc, it cannot rust. For satisfaction, use galvanized materials. They're "Sealed-in-Zinc" against rust.

TIME proves galvanized sheets stay stronger longer. Used as roofing and siding, they give buildings the "strength of steel" . . . the rust protection of Zinc. The "Seal of Quality" (above) is your guide to economy in buying galvanized sheets. It means they carry at least 2 oz. of Zinc per sq. ft. Galvanizing also lengthens fence life and service.

Galvanized products in the railroad industry guard bridges, cars, buildings, etc., against rust.



Strength, workability and resistance to heat as well as rust make galvanized sheets ideal for heating and air-conditioning.

FREE BOOKLETS

Fully illustrated and packed with practical information on galvanized sheets and Metallic Zinc Paint. Send for them, *today!*

AMERICAN ZINC INSTITUTE
35 East Wacker Dr., Chicago 1, Ill. Rm. 2608
Send me without cost or obligation the illustrated booklets I have checked.
- ☐ Repair Manual on Galvanized Roofing and Siding.
- ☐ Facts about Galvanized Sheets.
- ☐ Use of Metallic Zinc Paint to Protect Metal Surfaces.

Name _____
Address _____
Town _____ State _____

Engineering Schools

Hydrodynamics Laboratory

Plans for immediate construction of a hydrodynamic laboratory and model ship towing tank at the Massachusetts Institute of Technology have been announced. It will provide extensive facilities for research in the behavior of liquids and gases.

"This new building," explained President James R. Killian, "will meet the most acute of the institute's current needs for facilities to broaden its educational and research program in engineering and technology."

The laboratory is expected to cost at least $500,000. Construction is now beginning although available funds are being supplemented temporarily by unrestricted funds of the institute. Two stories in height, the building will provide for extensive research facilities as well as for offices, drafting rooms, and service facilities. It will include a towing tank to be used primarily to study the hydrodynamic properties of ship hulls and hydroplane floats.

Studies in the hydrodynamics field already under way at the institute will be continued and expanded in the new building, according to Arthur T. Ippen, professor of hydraulics.

Faculty News

Fred Ward Cox, Jr., a 1936 Georgia Tech. graduate, has been appointed assistant director of the institute's engineering experiment station.

Prof. John C. Rathbun who has taught civil engineering at the college of the City of New York for 18 years, has retired. He is credited with originating and developing the elastic skew arch theory, used in overhead cross-road construction.

Odd Albert, consulting engineer, who has been instructor at Manhattan College and the Polytechnic Institute of Brooklyn, has been appointed associate professor of civil engineering at the latter college. Recently, Mr. Albert ranked first among 200 applicants for the civil service position of administrative engineer in the Newark, N. J., school district.

Dean David L. Arm of the University of Delaware's school of engineering has been elected chairman of the resident instruction section of the engineering division, association of Land Grant Colleges.

"BERG"
CONCRETE SURFACER MODEL A

"Berg" equipment is used extensively for surfacing and finishing applications on concrete construction.

The many "BERG" Models available, permit exact selection for your particular application.

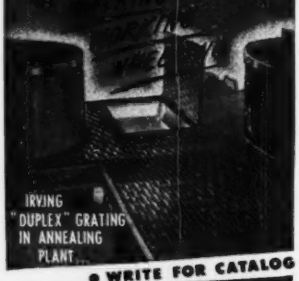
The distinctive "BERG" features give you the kind of results that are realized in better quality work, combined with lower costs.

"BERG" Heads and Attachments are interchangeable, thereby providing adaptability for vibrating, wire brushing, sanding and polishing applications.

THE CONCRETE SURFACING MACHINERY CO.
4667 SPRING GROVE AVE.
CINCINNATI 32, OHIO

Do you know that
every year thousands
of plants are made
SAFER
MORE COMFORTABLE
MORE EFFICIENT

IRVING GRATINGS
(OPEN STEEL MESH FLOORING)



• WRITE FOR CATALOG

IRVING SUBWAY GRATING CO., INC.
ESTABLISHED 1902
Home Office and Plant: 5063 27th Street
LONG ISLAND CITY 1, NEW YORK
Western Division: East of Park Ave.
EMERYVILLE 8, CALIFORNIA

OBITUARY

Theodore M. Focke, 78, for 25 years dean of Case Institute of Technology before his retirement in 1943, and for 51 years a member of the faculty, died in Cleveland, Ohio, March 2. He was graduated at Case in civil engineering in 1892.

Charles E. Reinicker, 63, a civil engineer and an executive of the Philadelphia Chamber of Commerce, died March 1 at Philadelphia. He was with the War Production Board for four years, serving as deputy director of the Philadelphia region. Formerly he had been with the United Gas Improvement Co. for 22 years where he had been assistant to the executive vice-president. He joined the Chamber of Commerce staff in December 1945 to handle production problems and industrial engineering for the industry council of the chamber and the Board of Trade. He studied civil engineering at Rensselaer Polytechnic Institute.

Price Wetherill Janeway, Jr., 58, engineer and attorney died February 28. He lived at Media, Pa. He was patent attorney for the United Engineers and Constructors, Inc. for the last three years. He held a similar position with the United Gas Improvement Co. from 1925 to 1945. He was a graduate of Lehigh University, 1913.

John Strawbridge Lloyd, Jr., a civil engineer and president of the engineering firm of Lloyd Associated Inc., died Feb. 11. He lived at Rosemont, Pa.

Max Schweid, Jr., 62, a construction engineer for the New York State Department of Public Works office in Rochester, died Feb. 28. He was a graduate of Cornell University school of engineering and had been associated with the Rochester engineering department before joining the state public works department 10 years ago.

James B. Harley, member of the construction firm of Pennell & Harley, South Carolina, died Feb. 27. A graduate of Clemson College, he received his civil engineering degree from the University of South Carolina.

Col. Robert Hill, 61, of the Army Corps of Engineers, died Feb. 27 in Oakland, Calif., from the lingering effects of Japanese imprisonment. He had been in charge of delaying the Japanese when American forces retreated to Bataan. Upon the surrender he was captured and imprisoned for 42 months at Camp Cabanatuan.

MAYO
TUNNEL & MINE EQUIPMENT

STEEL FORMS
for Tunnels, Sewers and Aqueducts
Write for Bulletin No. 12

TUNNEL SHIELDS
Complete With Hydraulic Equipment

AIR LOCKS

PNEUMATIC GROUTERS
Write for Bulletin No. 13

ROBERT S. MAYO
Civil Engineer
LANCASTER, PENNSYLVANIA

Cross-Country Jobs Demand "Light Weight *Plus* Dependability"...
SUPPLIED BY

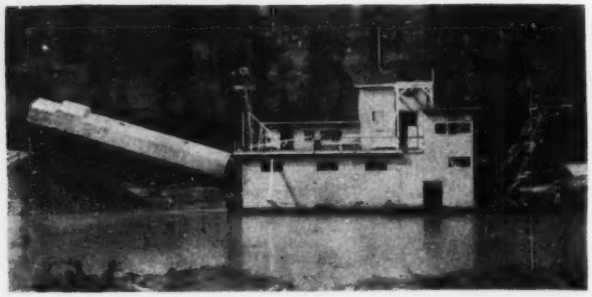
"Light weight *Plus* Dependability" really paid off on this subsurface exploration job across 11 miles of swamp and lowlands in Pennsylvania! Searching for a highway cut-off, this Acker Test Boring Rig, powered by a Heavy-Duty Air-Cooled Wisconsin, traveled on skids or oil barrel pontoons along the entire stretch, taking borings to depths of 60 feet.

Typical of Wisconsin built-in dependability is the mounting of the drop-forged crankshaft on tapered roller bearings at BOTH ends, to take up end thrust and radial thrust which permits mounting drive pulley, gear or sprocket directly on the extended crankshaft.

Specify Wisconsin Air-Cooled Power for "Most H.P. Hours" of on-the-job service . . . 2 to 30 hp., 4 cycle single-, two- and four-cylinder types.

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 14 WISCONSIN

REDUCE DOWNTIME
with YUBA DREDGE PARTS
Made for all dredges...long-wearing... built to fit exactly . . . quick delivery



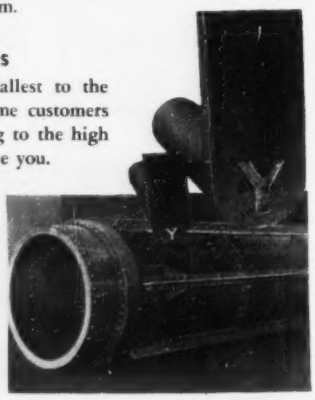
Yuba pioneered the use of alloy steels and heat-treating in the manufacture of dredge parts. You are sure of long-wearing, tough parts when you buy Yuba bucket pins, Abrasion Resisting and Manganese Steel screen plates, tumblers, ladder rollers, pumps, and other dredge parts. Yuba parts are carefully machined, enabling you to make field replacements quickly, and keep your shut-down time to the minimum.

Bucket Pins of all Sizes

Yuba makes bucket pins from the smallest to the largest diameters, and has supplied some customers with pins ever since 1912; thus attesting to the high quality and satisfaction our pins will give you.

A. R. S. Screen Plates

Yuba Abrasion Resisting Steel screen plates were developed especially for tough dredge service. Holes are taper drilled, uniformly spaced, to give you efficient and accurate screening. A.R.S. plates are stocked in all usual thicknesses from ¼" up.



Yuba parts, such as bucket pins and A.R.S. screen plates shown here, increase average daily running time and profits.

Only *operating* time is profitable time for you—so write, wire or cable your spare parts requirements NOW and have them on hand. We will send you prices and delivery information immediately. No obligation. Remember, we furnish parts for all bucket ladder dredges, whether Yuba design or not.

Yuba will build special equipment to your order. Complete steel fabricating, forging, and machine shop facilities available. Send us your blue prints or specifications for prices.

YUBA MANUFACTURING CO.

Room 715, 351 California St., San Francisco 4, California, U. S. A.

AGENTS { SIME, DARBY & CO., LTD. · SINGAPORE, KUALA LUMPUR, PENANG.
SHAW DARBY & CO., LTD., 14 & 19 LEADENHALL ST., LONDON, E. C. 3.

CABLES: YUBAMAN, SAN FRANCISCO · SHAWDARBCO, LONDON

Union College celebrates Squire Whipple Day

A commemorative meeting full of meaning for every civil engineer and construction man was held at Union College, Schenectady, N. Y., Feb. 25 when the annual Founder's Day exercises were focused on the career of Squire Whipple. A graduate of Union in 1830, Mr. Whipple is best remembered for the Whipple truss which he invented, but he is in fact the father of scientific bridge design in America.

The program at Union consisted of three papers by well known engineers who reviewed Whipple's life and work. Prof. Mortimer F. Sayre described Whipple's life in college. Shortridge Hardesty, consulting bridge engineer reviewed Whipple's contributions to American engineering. Carl B. Jansen, president, Dravo Corp., Pittsburgh, and a Union alumnus, discussed the future of bridge building and the debt that the art owes to Whipple. At the close of the exercises honorary degrees of Doctor of Engineering were conferred on Mr. Hardesty and Mr. Jansen.

Although Squire Whipple's greatest contribution was his book "A Work on Bridge Building", he was even more proud of a philosophical moral essay which he called "A Way to Happiness, being an Essay on Motives to Human Actions and the Fundamental Principles of Morality."

Mr. Hardesty paid tribute to the remarkable character of "A Work on Bridge Building." For an original work, said Mr. Hardesty, it shows that he had a surprisingly complete grasp of the subject. He presents the calculations of stresses for both fixed and movable loads . . . employing short-cut processes that are logical and still useful. A point that greatly impressed Mr. Hardesty is that he made "quick comparisons of the relative weights of different truss framings by figuring for each type of the stresses in all members, multiplying the stress in each member by its length and summing the products." In closing Mr. Hardesty quoted from an editorial in *Engineering News* of March 24, 1888, which shows that Mr. Whipple's abilities were not unappreciated by his contemporaries. The editorial said in part, "The death of Squire Whipple, on March 15, removes from the engineering world a man who by his individuality and originality practically created the modern art of bridge construction. Mr. Whipple seemed to labor purely in the interest of progress. He was modest in his claims and pushed them so little that he realized very slight financial profit from any of his inventions."

Commission wants to be Philadelphia port agency

The Delaware River Joint Commission has asked the Pennsylvania and New Jersey legislatures to pass legislation making it an agency to develop the port of Philadelphia.

In line with a recent report submitted by a New York engineering firm for general port development (ENR Jan. 13, p. 14), the commission asks that its name be changed to the Delaware River Joint Commission Port Authority. The group at present operates only the Delaware River bridge—Philadelphia and Camden.

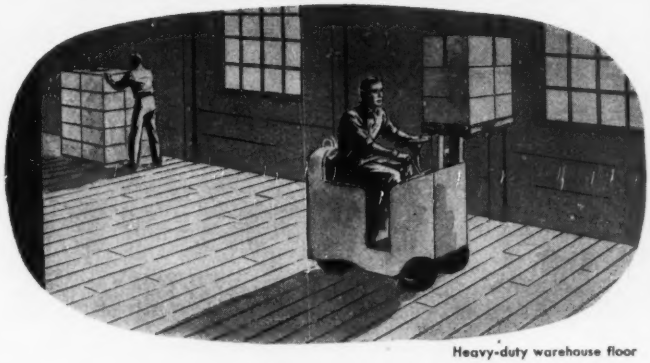
Urging that it be vested with "broad and extensive powers" to meet new responsibilities, the group pointed out that its jurisdiction would be a newly created port district embracing twelve counties in both states from Trenton to the sea.

For instance, the commission states flatly that it does not intend to increase the Delaware River bridge toll, despite the engineers' suggestion that the basic toll be raised to finance court development; the commission also decided against financing a Philadelphia-South Jersey rapid transit system at a cost of $32,000,000 (estimated).

Also, the group sees no immediate necessity for a major bridge across the Delaware River.

3-WAY PROTECTION

for the structures you build



Heavy-duty warehouse floor

WOOD TREATED WITH DU PONT "CZC"

1. Resists decay—Du Pont "CZC" gives years of added life to any wooden structure because it repels the fungi that cause decay. And it reduces replacement and maintenance costs to a minimum.

2. Repels termites—Each fiber of wood that's pressure-impregnated with "CZC" is termite repellent. Yet, the treated wood remains clean, odorless, paintable and safe to handle.

3. Retards fire—"CZC" also adds fire-retarding properties to wood . . . makes it difficult to ignite . . . gives added safety.

WRITE TODAY *for full details. Address E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., Wilmington 98, Delaware.*

For 3-Way Wood Protection

DU PONT CZC

TRADE MARK

CHROMATED ZINC CHLORIDE

DU PONT

REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

FOR YOUR PLANT

Are you concerned about the high heat costs for your factory or warehouse? Then you must learn about "THERMOBLOC Packaged Heat." This most talked-of advance in industrial heating can appreciably lower your costs.

Whether your area measures hundreds of square feet or acres of floor space, THERMOBLOCS, strategically located, each occupying a spot 30" in diameter, will heat approximately 4,000 sq. ft. of adjacent area. Each has its own combustion chamber and automatic burner for oil or gas, and circulates live warm air at the working level of your personnel. No unnecessary heating at the roof level. High heat efficiencies of 82-86%.

At the command of the thermostat, THERMOBLOC instantly delivers heat without expensive air ducts, steam piping or radiators. During weekend or night shutdown, there are no boilers to bank, no pipes to freeze, no fuel to burn. In summer, THERMOBLOC draws the cool air from the floor level and circulates it by a powerful fan to the working level.

Connect the fuel and power lines and start up. (Just the thing for construction jobs also.) Standard design "THERMOBLOC Packaged Heat" means units in stock for immediate delivery that can be installed inexpensively in a few hours. Total cost is approximately ⅓ as much as for a steam or hot water installation.

This remarkable advance in modern heating methods is interestingly explained in the new bulletin for executives, "HEAT—*Where* you want it . . . *When* you want it!"

Send for your copy at once.

THERMOBLOC DIVISION

PRAT-DANIEL CORP.

Manufacturers of Thermix Power Plant Equipment

71 Water Street, East Port Chester, Conn.

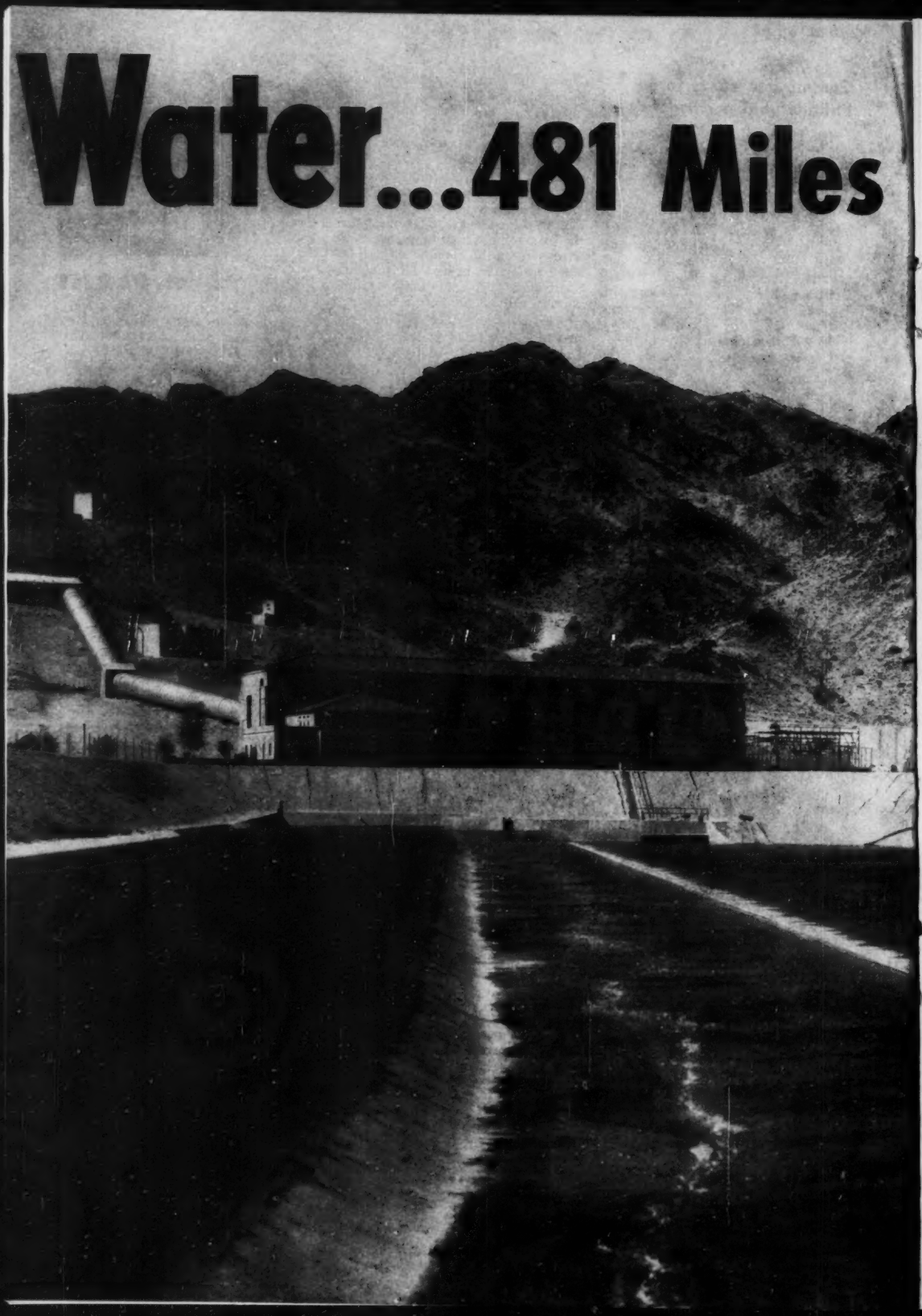
Gentlemen:
Please send me your bulletin HEAT-*Where* you want it . . . *When* you want it!

Name_____ Title_____

Company_____

Address_____

Water...481 Miles



from Home!

Southern California Water Supply Depends on Reliable Allis-Chalmers Equipment

HAULING WATER over and through mountains for 481 miles is an enormous task. Yet, that's the length of the longest pipeline of the Metropolitan Water District of Southern California. Bringing water from the Colorado River to the homes and businesses of Southern California has made possible the rapid growth of that area.

Included in this gigantic system are 45 mountain tunnels, 7 reservoirs, 5 pumping stations, water softening plant, filtration plant and hundreds of miles of acqueducts and pipelines. Today the system efficiently serves Los Angeles and 20 neighboring communities having a combined population of over 3,000,000.

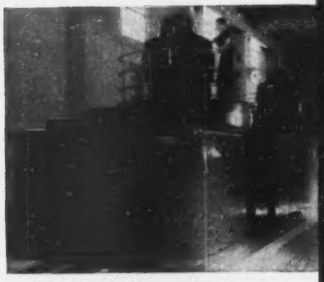
The Iron Mountain Pumping Station (shown here) is Allis-Chalmers equipped. Three 90,000 gpm pumps, operating against a 144 ft head, force water into a tunnel in the mountain. Specifications demanded 88 percent efficiencies from pumps but all A-C units tested 91.3 or better. Three vertical synchronous motors of 4300 hp each drive the pumps. All A-C equipment, operating since 1939, have delivered reliable service.

The same kind of fine equipment engineering that went into the pumps and motors of this great system is available for your community, whether large, medium or small. Today, Allis-Chalmers offers you the world's widest range of public works equipment. For additional information call your nearest A-C office or write direct.

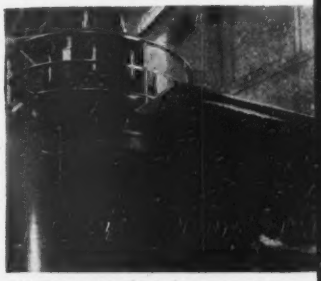
A 2600

ALLIS-CHALMERS, 1018A SO. 70 ST.
MILWAUKEE, WIS.

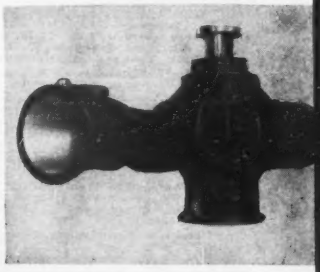
A-C Provides Pumps and Motors for Southern California Pump Station



SYNCHRONOUS MOTORS, 4300 hp each, are of rectangular design, accommodate cooling coils. Housings protect against entrance of sand and dust.



GAUGE CABINET for indicating cooling water and oil condition of motor. Cooling is accomplished by fans which recirculate the air within the motor.



GIANT PUMPS are rated 90,000 gpm and are designed with a 48 in. discharge. The impellers measure 78⅛ in. and are driven by 20 in. shafts.

ALLIS-CHALMERS

One of the Big 3 in Electric Power Equipment—Biggest of All in Range of Industrial Products

CONSTRUCTION REPORTS

Proposed Work

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.
ELSIE EAVES, Manager — J. A. MAHONEY, Reports — M. R. ROESSLER, Statistics

WATER SUPPLY

●**Calif., San Diego**—City, Civic Center Bldg., Electric Ave. Pipeline, incl. 22,200 ft. 20 in. pipe, appurtenances, supply Pacific Beach and La Jolla Areas. **$360,000**; Kearney Mesa Pipeline incl. 15,560 ft. 36 in. and 24,000 ft. 30 in. rein.-con. pipe appurtenances to Linda Vista and Pacific Beach, La Jolla Areas, **$1,100,000.** Fred D. Pyle, hydraulic engr. G. E. Arnold, dir. Water Dpt., Civic Center Bldg., engr.

Conn., Bristol—City, Frank J. Thiery, supt. Water Dpt., Riverside Ave., water sys. development, incl. 16 in. watermain Forestville Sect. raising Dam at Reservoir 7, constr. filtration plant, water sys., extens. South Mountain, **$560,000.**

Conn., New London—City, City Mgr., Municipal Bldg., exten. watermains, various streets. **$112,000.** Kenneth Holmes, city engr. CD 8/16/46—ENR 9/5/46.

●**Ill., Bedford Park**—Village, 7645 W. 66 St., plans by Alvord Burdick & Howson, 20 N. Wacker Dr., Chicago, watermains, 2 pump. stations, elevated tanks, reservoir. **$1,400,000.**

La., Clinton—Town, c/o Mayor, **$120,000** bond election Apr. 5, WW imprvs.

N. J., Margate—City, reservoir. **$200,000.** Clyde Potts, 30 Church St., New York, N. Y., consult. engr. J. I. Somers, Guarantee Trust Bldg., Atlantic City, engr.

O., Loudonville—City, water treatment plant. **$125,000.** Burgess & Niple, 668 E. Broad St., Columbus, engrs.

O., Mount Vernon—City, water softening plant. **$350,000.** Burgess & Niple, 468 E. Broad St., Columbus, engrs.

Pa., Torrance—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, plans by Sorber & Hoone, 1st Natl. Bank Bldg., Greenburg, replacing water sections in 6 bldgs. at Torrance State Hospital. **A. F. Jones, c/o owner,** ch. engr.

Pa., West Chester—West Chester Boro, water distr. sys. imprvs. **$300,000.** Albright & Friel, Inc., 1520 Locust St., Phila., consult. engr. CD 11/11/48—ENR 12/9/48.

●**Tex., Ft. Worth**—W. O. Jones, city mgr., Ft. Worth, 60 in. intake Lake Worth, **$750,000.** Joe J. Rady, 811 Insurance Bldg., consult. engr.; 6 m. g. clear well at Holly Water Plant, **$787,000.** Uel Stephens, dir. Water Works, City Hall; 48 in. clear Fork Crossing, **$250,000.** Freese & Nichols, 407 Danciger Bldg., consult. engrs.

Tex., Houston—City, c/o Airport Div., water pump. station, **$120,000;** 600,000 gal. water reservoir, **$100,000.**

Wash., Chewelah—City, City Hall, 500,000 gal. concrete reservoir, 2 mi. 12 in. steel pipeline and distr. sys. **$145,000.** W. L. Malony, Symons Bldg., Spokane, consult. engr.

B. C., North Kamloops—Village Comrs., North Kamloops, water sys. **$110,000.**

Man., Winnipeg—P. Utilities Comn., J. St. John, ch., Winnipeg, WW facilities, various sections city, Approx. **$350,000.** W. D. Hurst, c/o owner, engr.

N. B., Fredericton—Municipality, water extens., Forest Hill, reservoir. **$100,000.** J. D. Mackay, city engr.

Ont., Bowmanville—Municipality, filtration plant, **$100,000.** Proctor-Redfern & Laughlin, 11 Jordan St., Toronto, engrs. CD 11/30/45—ENR 12/13/45.

Ont., Cornwall—Municipality, filtration plant. **$100,000.**

Ont., Ottawa—City and Dominion Govt., exten. 4 mi. 16 in. watermain to 3 Dominion Govt. installations, seminary and housing in Gloucester Twp., 500,000 imperial gal. storage tank, approx. **$500,000.** N. B. Mackostie, 193 Sparks St., engr.

Que., Coaticook — Municipality, reservoir, Coaticook River. **$100,000.** Dpt. Hydraulic Resources, Quebec City, Que., engr.

SEWERS, WASTE DISPOSAL

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., Hall of Records, sanitary sewers in Atlantic St., Altadena, **$100,100.** C. E. Arnold, 205 S. Broadway, co. engr. and surv.

●**Fla., Sarasota**—City, sewer and water exten., sewage disposal plant and line extens. and water treatment imprvs., extens. and water lines. **$2,850,000.** CD 2/1/45—ENR 2/22/45. under Water Supply and CD 2/1/45—ENR 2/2/45, under Sewers.

Fla., Tampa—City, Sect. 5, sanitary sewer program, **$450,000.** Greeley & Hansen, 220 S. State St., Chicago, Ill., engrs. CD 2/14/47—ENR 3/6/47.

Ill., East Peoria—East Peoria Drainage & Levee Dist., East Peoria, pump. station, **$200,000.** Alvord, Burdick & Howson, 20 N. Wacker Dr., engrs.

Ill., Mount Prospect—Village, Village Hall, intercepting and relief sewers. **$430,000.** Conser, Townsend & Assoc., 351 E. Ohio St., Chicago, engrs. CD 1/15/47—ENR 2/6/47.

Ill., Swansea—Village Bd. Trustees, sanitary sewerage sys. Approx. **$100,000.**

Ia., Monroe—City, City Hall, sewers and sewage plant, **$115,000.** Brown Eng. Co., 322 K. P. Bldg., Des Moines, engr. CD 1/4/46—ENR 1/21/46.

Ia., Windsor Heights, (RFS from Des Moines)—Village, Village Hall, sanitary sewers. **$100,000.** Brown Eng. Co., 322 K. P. Bldg., Des Moines, engr.

La., Shreveport—City, City Hall, plans by William S. Evans, Ardis Bldg., incinerator on Kings Hy. **$200,000.**

Mich., Montague—City, City Hall, sanitary sewers, lift station, **$300,000.** Alfred E. Hansen, 401-2 Michigan Theatre Bldg., Muskegon, consult. engr. CD 8/19/47—ENR 9/4/47.

Neb., Fremont—City, City Hall, storm sewers. **$137,588.**

●**N. J., Linden-Roselle**—Cities of Linden and Roselle (Linden-Roselle Sewer Auth.), intercepting sewer, primary treatment plant. **$3,-000,000.** Alexander Potter Assoc., 50 Church St., New York, N. Y., consult. engrs.

N. Y., East Syracuse—Village, pump. station and imprv. sewerage sys. **$120,000.**

N. C., Kings Mountain—Town, Mayor, H. Tom Fulton, bond election May 10, sewer plant imprvs. and extens. to line, **$250,000.** CD 1/26—ENR 2/17.

Pa., Phila.—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, sewage disposal plant at Phila. State Hospital. **$350,000.** H. A. Kuljian & Co., 1200 Broad St., Zone 21, consult. engrs. A. F. Jones, c/o owner, ch. engr. CD 12/20—ENR 1/17.

Tex., Jacinto City (P. O. Houston)—City, L. C. Handler, mayor, 10326 Palestine St., Houston, voted bonds storm sewers, **$130,000.** Frank J. Metyko, Scanlon Bldg., Houston, consult. engr. CD 2/16.

Tex., Jasper—City, Radford B. Gibson, mgr., sewage treatment plant, **$131,000.** Garrett Eng. Co., 5008 Almeda Rd., Houston, consult. engr.

Tex., Pearland—Pearland Fresh Water Dist., Pearland, sanitary and storm sewers, **$100,000.**

Va., Roanoke—City, sewage disposal plant. **$750,000.** Mattern & Mattern, 118 A. Campbell Ave. S. W., Roanoke, Va., and Alvord, Burdick & Howson, 20 N. Wacker St., Chicago, Ill., consult. engrs.

†**Wash., Bremerton**—Yards & Docks Annex, Navy Dpt., Arlington, Va., imprvs. sewage disposal sys. **$600,000.** CD 1/22/48—ENR 2/5/48.

●**Wash., Seattle**—City, County-City Bldg., Zone 4, sewers in area between 12 Ave. S. W. and 42 Ave. S. W. in Longfellow Creek drainage area. **$1,564,000.** R. W. Finke, city engr. CD 3/21/46—ENR 4/4/46.

B. C., White Rock Surrey — Municipality, Municipal Hall, Cloverdale, sewage mains, **$200,000,** sewage disposal plant, **$200,000** machinery for sys., **$60,000.** Burtt, McGugan & Hunter, 30 McKenzie St., New Westminster, engrs. CD 8/13/47—ENR 9/4/47.

Man., Winnipeg—P. Utilities Comn., J. St. John, chn., Winnipeg, trunk sewer extens., northwest part of city, incl. 2 mi. 8 ft. pipe from McPhilip St. to Jefferson Ave., West Kildonan area. Approx. **$450,000.** W. D. Hurst, c/o owner, engr.

Ont., Chapleau—Twp. of Chapleau, c/o T. R. Sere, clk., sewerage sys. **$250,000.** Proctor-Redfern & Laughlin, 11 Jordan St., Toronto, engrs.

Ont., Norwich—Council, sewerage sys. **$100,-000-$125,000.** Hagley, Fort Erie, engr.

Que., Greenfield Park—Municipality, collective sewers, **$160,000.** A. J. Lalonde & Co. Ldt., 958 Dunlop Ave., Outremont, engrs.

Que., Montreal — Municipality, incinerator, **$300,000.** H. A. Gibeau, city engr.

BRIDGES

●**Florida**—State Rd. Dpt., Tallahassee.

Manatee Co.—concrete, pile bridge, linking Brandenton and Anna Maria Key, part of coast highway. **$2,000,000.** Baile & Horton, Bradenton, archts.

●**Fla., St. Petersburg** — St. Petersburg Port Authority, St. Petersburg, plans by Baile & Horton, Brandenton, Tampa Bay Bridge. **$15,-000,000-$20,000,000.** CD 11/28/47—ENR 12/4/47 under LB.

●**O., Youngstown** — City and Railroads, City Hall, Division St. bridge. **$2,100,000.**

Pa., Oreland—The Reading Co., E. L. Gosnell, ch. engr., Reading Terminal, Phila., Zone 1, grade crossings, abolishing 3 old ones and building 2 at nearby point, overpass approach, altering tracks. Over **$100,000.**

Newfoundland, St. Johns—City, City Hall, repaving, reconstructing Water St. Approx. **$400,000.** Grant R. Jack, c/o owner, engr.

Que., Montreal—Municipality, viaduct reconstruction, Richmond St. **$110,000.** H. A. Gibeau, city engr.

Que., Montreal—Municipality, viaduct over Canadian Pacific R. R. tracks, Cavendish Ave., **$350,000;** subway under Canadian Pacific R. R. tracks, on Christopher Columbus St., over **$100,000.** H. A. Gibeau, city mgr.

●**Tex., Houston** — Harris Co., Courthouse, steel, concrete bridge over San Jacinto River Reservoir. **$1,149,000.** Howe & Wise, 4119 San Jacinto St., consult. engrs. CD 6/9—ENR 7/8.

Washington — Washington State Toll Bridge Auth., Olympia, viaduct at west end of lake Washington pontoon bridge, **$300,000;** 2 underpasses on Mercer Island at east end of bridge, **$150,000,** King Co. C. E. Andrew, c/o owner, ch. engr.

●**B. C., Vancouver**—City, R. Thompson, clk., plans by J. R. Grant, 500 Beatty St., bridge, Granville St. Approx. **$7,500,000.** CD 9/28/43—ENR 9/30/43.

Ont., Woodbridge (Toronto) — Toronto & York Roads Co., 57 E. Adelaide St. E., Toronto, replacing iron bridge, approaches, Woodbridge-Kleinburg Rd., near here. Approx. **$100,000.** H. C. Rose, c/o owner, engr.

Quebec—Province of Quebec, Quebec City.

St. Aime—bridge over Yamaska River, **$200,-000.** Dpt. P. Wks., Quebec City, engr.

STREETS AND ROADS

Calif., Los Angeles — Bd. Supervs., Los Angeles Co., 501 Hall of Records, imprv. Adams St. and other streets, vicinity of Artesia, **$168,300;** Normandie Ave., Manchester to Century Blvds., over **$50,000.** C. E. Arnold, co. engr. and surv.

●**Calif., Los Angeles** — Bd. P. Wks., 153 City Hall, imprv. Roosevelt Jefferson to Imperial Blvds., **$2,206,800;** Imperial Hy. from Ocean Parkway to Sepulveda Blvd., **$400,000.** Lloyd Aldrich, city engr.

Conn., New London — City, City Hall, c. conc. and removing of trolley rails, on State St. **$127,000.** CD 4/11/46—ENR 5/5/46.

Neb., Lincoln — City, City Hall, widening, repaving 27 St. from O to H Sts. and E. to South Sts. **$271,000.** D. L. Erickson, city engr. CD 10/8/47—ENR 10/16/47.

N. J., Atlantic City—Atlantic City Comn., City Hall, resurfacing Lincoln Ave., etc. **$61,-778;** Brigantine Blvd., etc. **$50,000.**

●**Tex., Conroe** — Montgomery Co., Robert H. Lindsley, judge, Courthouse, road constr., paving and imprvs. existing roads, throughout county. **$1,000,000.** CD 4/2/47—ENR 4/17/47.

Tex., Houston — Harris Co., Courthouse, 12.69 mi. road constr. and permanent type paving Atascocita Rd. **$900,000.** Howe & Wise, 4119 San Jacinto St., consult. engrs. CD 6/9—ENR 7/8.

Tex., Jacinto City (P. O. Houston)—City, L. Chandler, mayor, 10326 Palestine St., Houston, voted bonds Feb. 26, street imprvs., repairing roads and bridges. **$100,000.** Frank J. Metyko, Scanlon Bldg., Houston, consult. engr CD 2/16.

Tex., Tenaha—Freestone Co., c/o Judge, Courthouse, road constr. **$350,000.**

Va., Virginia Beach — City, street imprvs. **$775,000.**

●**Washington**—State Hy. Dpt., Olympia.

Adams Co.—highway from Primary State Hy. 18 east of Ritzville to junction with Primary State Hy. 3, near Union Flat Creek. **$500,000.**

Benton Co.—completing Track road from Goldendale Hy. to Prosser, **$1,000,000.**

Douglas Co.—road from Secondary State Hy. 16-B to Crown Point near Grand Coulee Dam, **$850,000.**

highway from Bridgeport to Leahy, **$470,000.**

Skagit Co.—wid'n. 8.2 mi. Secondary State Hy. 1-C from Edison to junction with Anacortes branch, **$675,000.**

1.1 mi. Edison to Chuckanut branch, **$95,000.** wid'n. 1.3 mi. Hy. 1-F, Chuckanut branch to main branch of Hy. 1, **$80,000.**

1.2 mi. from Junction with Hy. 1 to Sedro-Woolley, **$240,000.**

Wid'n. 5.1 mi. Secondary Hy. 1-H from Conway to Secondary Hy., 1-A at MacMurray. **$340,000.**

relocating Secondary State Hy. 1-A 1.3 mi. from Snohomish Co. line to junction with Hy. 1G, **$1,200,000.**

5.7 mi. from junction with 1-G to Sedro-Woolley, **$685,000.**

9.7 mi. Sedro-Woolley to Whatcom Co. line, **$1,170,000.**

resurf., wid'n. 5.7 mi. Hy. 1-D from Deception Pass to junction with Hy. 1, **$700,000.**

wid'n. 3.3 mi. Hy. 1-E from junction with Hy. 1 to junction with J-A. **$380,000.**

wid'n. 2 mi. Hy. 1-C, Burlington west to junction with Anacortes branch, **$350,000.**

wid'n. 5.3 mi. Anacortes-Mount Vernon Hy. from Anacortes to Snohomish Slough, **$1,-130,000.**

wid'n., straightening 6.3 mi. from Whitney to Mt. Vernon, **$625,000.**

constructing 74.8 mi. new cross-state hy. from Marblemount to Mazama, **$10,138,000.**

wid'n. Primary State Hy. 17, Sedro-Wooley to Hamilton, **$885,000.**

wid'n., straightening 6.5 mi. Hamilton to Birdsview, **$340,000.**

MORETRENCH WELLPOINTS LOWER WATER 90 FEET

for Neversink Dam cutoff wall, New York

Excavation for 2,460-ft. core wall construction was made in sand, gravel and clay . . . ninety feet below normal water level. Job went ahead *fast* "in the dry"! Contractor: S. A. Healy Co., White Plains, N. Y.

To cut the high cost of plumbing count on MORETRENCH

MORETRENCH CORPORATION

NEW YORK, N. Y. CHICAGO, ILL. TAMPA, FLA.
HOUSTON, TEXAS ROCKAWAY, N. J.

How Arco's Big 3 Can Protect Your Building Investment

Square D Co., Los Angeles. Applier: A. O. Miller Waterproofing and Painting Co., Los Angeles

Heavy Film, Not a Paint, Dum-Dum Masonoc Protects Masonry Building Surfaces

You can seal cracks, stop moisture seepage, prevent the need for costly reconstruction by applying a thick, tough but elastic coating of Dum Dum Masonoc. This time-proved product weather-protects, insulates and improves the appearance of every building to which it is applied.

INSULATES—applied 1/16" to 1/8" thick, provides extra insulation and protection.

PLIABLE—Expands and contracts with ordinary movement of building surface.

BRIDGES CRACKS—Eliminates the chief source of destructive surface deterioration.

HEALS ITSELF—If outer surface is broken, undersurface heals at point of abrasion.

2 DUM DUM FOR METAL—Its heavy film protects exposed metal surfaces against weather, fumes and gases. Stops rust and corrosion.

3 STACK DUM DUM—Heavy coating, protects concrete stack surfaces against vibration, high temperatures and general weather wear.

WRITE TODAY FOR THESE VALUABLE BOOKLETS

THE ARCO COMPANY
7301 Bessemer Avenue
Cleveland 4, Ohio

☐ Please send booklets illustrated.
☐ Please supply names of appliers operating in this locality.
☐ Please have maintenance engineer call.

Name _____ Title _____
Company _____
Street & No. _____
City _____ Zone _____ State _____

ARCO Maintenance Products

5.5 mi. Birdswiew-Concrete, **$1,400,000.**
9.8 mi. Concrete-Rockport, **$1,190,000.**
9.2 mi. Rockport-Marblemount, **$900,000.**
wid'n. Primary State Hy. 1 from Snohomish Co. line to Conway, **$750,000.**
relocating 4.2 mi. from Conway to Mt. Vernon, **$1,520,000.**
wid'n. 0.6 mi. from Mt. Vernon to junction with Hy. 1-G, **$200,000.**
wid'n. 2.9 mi. from junction with Hy. 1-G to junction with Burlington-Chuckanut cut-off, **$1,165,000.**
wid'n. 3.1 mi. from Chuckanut junction to Secondary St. Hy. 1-F, **$655,000.**
wid'n. 8.4 mi. from junction with Hy. 1-F to Whatcom co. line, **$1,830,000.**

● **Washington**—State Hy. Dpt., Olympia,
Pacific Co. — constr. hy. from Megler to Knappton, **$300,000.**
Pierce Co.—constr. hy. from Willow's Corner to State Hy. 1 and repairing Hy. 5-D from Puyallup to Willow's Corner, **$1,647,000;**
imprv. 18.5 mi. Primary State Hy. 5-E from Orting to junction with Hy. 5, **$632,000.**
3.4 mi. hy. from Sumner to King Co. line, **$393,000.**
repairing secondary State Hy. 5-D from Puyallup to King Co. line **$375,000.**
imprv. 2.5 mi. Primary State Hy. 5 east of Sumner **$58,000.**
repairing secondary State Hy. 5-E, Orting to Electron, **$48,000.** O. R. Dinsmore, acting state hy. dir.

● **British Columbia**—Province of British Columbia, Parliament Bldgs., Victoria,
Squamish to Vancouver, hy. **$5,000,000.** H. G. Anderson, Parliament Bldgs., Victoria, engr. CD 3/1/43—ENR 3/4/43.
British Columbia — Province of B. C., Parliament Bldgs., Victoria.
North Vancouver—completing constr. mountain road. Mount Seymour Park. **$225,000.** H. C. Anderson, Parliament Bldgs., Victoria, engr. CD 3/1/43—ENR 3/4/43.

EARTHWORK, WATERWAYS

Fla., Palmetto — Raymond Sellhorn c/o "Sellhorns" Sarasota, private boat basin with apartments over individual slips, 1,800 ft. sheet piling, dredging, paving and dock work with pile. **$350,000.**

Tex., Carrizo Springs — Zavala-Dimmit Counties Water Imprvt. Dist., Carrizo Springs, project abandoned, Nueces River Irrigation and Dam Proj. **$250,000.** CD 7/17/47—ENR 8/7/47.

Va., Virginia Beach — Town, c/o Town Council, reinforcing sea walls along beach. **$200,000.**

New Thousands Now FOLLOW THE BIG PAY JOBS

In their modern PRAIRIE SCHOONERS

CONSTRUCTION INDUSTRY FINDS TRAILER HOMES ANSWER TO ON-SITE HOUSING
6,000 Engineers, Carpenters, Plasterers, Machinists, Cement Finishers, Maintenance Men Bought Trailers in '48.

Mrs. Helen Kearns, Roby, Indiana, is one of thousands of wives who love trailer living

Send for FREE 24 PAGE BOOK 27 ILLUSTRATIONS

if
- ★ housing is not available near job site
- ★ housing is available but rent is high
- ★ you want to take family along
- ★ you want to keep key men happy
- ★ you've been turning down those jobs 80 miles away . . .

Get a Prairie Schooner. Tops with you men who know the finest in material—in design—in workmanship! Prairie Schooner has all-aluminum exterior—beautiful wood-panelled interior. Weather-tight with no butt joints! Three insulating factors instead of just two keep Prairie Schooner up to 10 degrees cooler in summer, warmer in winter. Larger living quarters—yet costs less to tow. Prairie Schooner saved 93 gallons of gas in 1410 mile showdown test. Six models; model 200 is specially designed for use as office and home on the site.

New illustrated book tells you what you want to know

24 packed pages . . . living on the site . . . heating . . . refrigeration . . . utilities . . . interviews and pictures of people who are living in America's 8,000 trailer parks . . . floor plans . . . interiors . . . specifications. For your free copy write to Prairie Schooner, Inc., Dept. ENR-3, Elkhart, Ind.

The Distinctive

B. C., New Westminster—Municipality, reconstructing retaining wall, Columbia St. **$250,000.** A. Stewardson, city engr.

Ont., Ingersoll — Upper Thames Valley Auth., c/o Watson H. Porter, secy., London, straightening, widening, placing embankments, south branch Thames River. **$600,000.**

●**Que., Longueuil** — Dominion Govt., Dpt. P. Wks., 5,000 ft. protection wall along St. Lawrence River. **$1,000,000.** R. Blais, c/o owner, engr. CD 8/31/45—ENR 9/6/45.

AIRPORTS AND AIRBASES

Ia., Keokuk — AIRPORT — City, City Hall, airport. **$300,000.** Waxhner Engr. Co., Ames, engr.

Kan., Manhattan — AIRPORT — City, City Hall, airport. **$150,000.** Wilson & Co., 223 N. Santa Fe St., Salina, engrs. CD 12/20—ENR 12/30.

●**Tex., Ft. Worth** — AIRPORT IMPRVS. — City, W. G. Jones, mgr Contr. 2, Greater Ft. Worth International Airport, near here, incl. two 200x6400 ft. runways taxiways, and loading ap on, near here. **$2,315,000.** C. M. Thelin, dir. P. Wks., City Hall. CD 1/17/45—ENR 3/22/45.

Newfoundland, Corner Brook—HOUSING—Dominion Govt., Dpt. National Defense (Air), Cartier Sq., Ottawa, Ont., housing units at airport. **$350,000.** Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., engr.

Newfoundland, Freshwater — HOUSING — Dominion Govt. of Canada, Dpt. National Defense (Air), Cartier Sq., Ottawa, Ont., housing units at Placentia Airport. **$300,000.** Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., engr.

Newfoundland, St. Johns—HOUSING—Dominion Govt., Dpt. National Defense (Air), Cartier Sq., Ottawa, Ont., housing units for permanent staff at airport. **$350,000.** Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., engr.

Ont., Downsview—AIR STATION IMPRVS. —Canadian Commercial Corp., 70 Lyon St., Ottawa, remodeling bldgs., steel sphere, 40 ft. diam., vacuum lines, wind tunnels of aerodynamics research laboratory, at Downsview Royal Canadian Air Force Station. Approx. **$250,000.**

●**Ont., Hamilton**—HOUSING—Central Mortgage & Housing Corp., 295 Fleet St. W., Toronto, 200 houses at airport, Approx. **$1,400,000.** A. J. E. Smith, c/o owner, engr.

PUBLIC BUILDINGS

Ala., Auburn—Alabama Polytechnic Institute, Auburn, plans by Van Keuren Davis & Co., American Life Bldg., Birmingham, general education bldg. **$500,000.**

Ala., Prichard—Mobile Co., plans by Edward D. Slater, O'Gwynn Bldg., Mobile, Vigor High School addns. **$440,000.** CD 2/15.

Ark., Arkansas City—Desha Co., Arkansas City, plans by Bruce Anderson, Wallace Bldg., Little Rock, erecting Desha County Hospital. **$300,000.**

Calif., Bakersfield—Bd. Supervs., Kern Co., Courthouse, plans by Wright, Metcalf & Parsons, 111 Morgan Bldg., juvenile detention home. **$459,000.**

Calif., Baldwin Park—Baldwin Park School Dist., 173 Hold Ave., plans by Kistner, Curtis, Wright, 816 W. 5 St., Los Angeles, intermediate school, incl. administration and classroom bldgs., laboratory and shop. **$387,000.**

●**Calif., Bellflower**—Excelsior Union High School Dist., Bellflower, voted $1,300,000 bonds high school between Center St. and Compton Blvd. **$2,600,000.**

Calif., Coachella — Coachella Union High School Dist., Coachella, 17,000 sq. ft. steel, concrete block shop. **$250,000.** Bowen, Rule & Bowen, 2835 Gilroy St., Los Angeles, consult. engrs.

Calif., Chino—Chino School Dist., Chino, voted $600,000 bonds, elementary school, **$320,000;** high school, **$280,000.** CD 6/18—ENR 7/7.

Calif., Costa Mesa—Costa Mesa School Dist., Costa mesa, plans by Kistner, Curtis & Wright, 816 W. 5 St., Los Angeles, primary school. **$265,000.**

Calif., Decoto — Decoto Elementary School Dist., Decoto, plans by Birge M. Clark & Walter Stromquist, 321 Channing Ave., Palo Alto, 13 classroom frame, stucco, school addn., 6 and H Sts., **$280,000.**

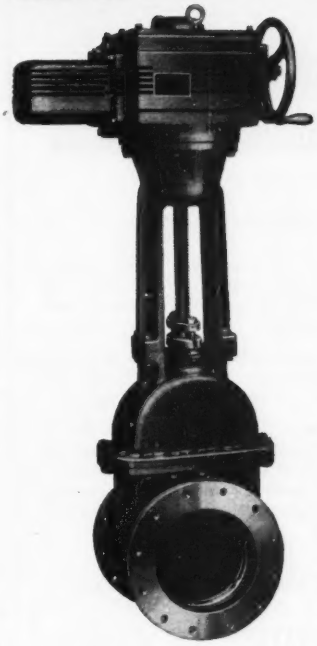
Calif., El Cajon — El Cajon Valley Union Elementary School Dist., Ayamaco School addns. **$269,000.**

Calif., El Centro—City, 2 story, 22,000 sq. ft. rein.-con. city hall, **$400,000.** J. F. Golden, 1461 Main St., El Centro, consult. engr.

Calif., Fort Bragg — Ft. Bragg High School and Elementary School Dists., $555,000 bond election Feb. 15, school, **$275,000;** and high school, **$280,000.**

Calif., La Canada—Pasadena City School Dist., 351 S. Hudson Ave., Pasadena, plans by Eugene Weston Jr. and Keith P. Marston, 385 E. Green St., Pasadena, 3 school bldgs. at La Canada Junior High School, **$675,000.**

You Need a KENNEDY Electrically Controlled Valve



Where manual operation is too lengthy or too difficult.

Where valve control is desired at a distant point, or at two or more points.

Where a group of many valves must be operated frequently.

KENNEDY furnishes electrically controlled valves, for standard and low pressure services and all standard A.C. and D.C. voltages.

The motor, reduction gearing and limit switches are fully enclosed in a weather-proof housing. Safe, dependable operation is secured through accurately set limit switch with torque seating and thermal overload protection.

Emergency manual operation provided. Handwheel does not turn while valve is operated electrically.

KENNEDY electrically operated valves are ready for use. Setting of limit switch, trial operation and hydrostatic test are all completed at the factory.

KENNEDY Fig. 611G., Top-mounted Electrical Control on Standard, Iron Body, Double-Disc, Gate Valve; Services up to 125 Steam, 175 pounds Water, Oil or Gas; 4" through 60" sizes available.

Check List for Use with Inquiries or Orders

- ☐ Size of valve and whether O.S. & Y. or Non-rising Stem.
- ☐ Working or test pressure and actual unbalanced pressure on discs.
- ☐ Type connection; flanged, bell ends, or special.
- ☐ Position of valve in pipe line.
- ☐ Electric current characteristics; D. C. or A.C. voltage; phase, cycles if A.C.
- ☐ Number of control stations wanted.
- ☐ Brief description of installation; fluid or gas controlled, frequency of operation and function of valve.

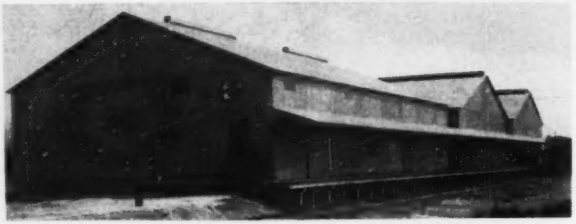
Write for complete information. No obligation.

THE KENNEDY VALVE MFG. CO.
1066 EAST WATER ST.
ELMIRA, NEW YORK
VALVES • PIPE FITTINGS • FIRE HYDRANTS

OFFICE-WAREHOUSES IN NEW YORK, CHICAGO, SAN FRANCISCO • SALES REPRESENTATIVES IN PRINCIPAL CITIES

Prompt Delivery on

STEEL BUILDINGS



One of the many industrial steel buildings made by Allied Steel

• *Custom Built* • *Insulated if Desired*

- Structural Steel Fabrication
- Gratings
- Ladders
- Platforms
- Safety Cages
- Ventilators

Allied Steel is in a position at the present time to furnish *prompt delivery* on Steel Buildings, Structural Steel Fabrication and Steel Accessories.

Allied will completely engineer your special building requirements from analysis of your need to placing the last piece of steel.

Allied buildings can be furnished insulated; they are flexible, can be lengthened or shortened; afford nearly 100 percent salvage; are portable; have low initial investment and low cost maintenance; are fire resistant and weathertight.

ALLIED BUILDINGS STEEL

WRITE FOR ALLIED'S CATALOG

ALLIED STEEL PRODUCTS CORP.

2112 North Lewis Ave. Tulsa, Oklahoma

MacArthur

39 YEARS INSTALLING PILES
OF EVERY TYPE

CAST-IN-PLACE CONCRETE COMPOSITE
STEEL SECTIONAL PIPE TIMBER

SOIL AND ROCK EXPLORATION

MacARTHUR CONCRETE PILE CORPORATION
18 EAST 48th STREET NEW YORK 17, N. Y.
BOSTON • CINCINNATI • NEW ORLEANS

Calif., Lodi—Lodi Elementary School Dist., Lodi, voted $625,000 bonds Emerson School imprvs. Over **$250,000.** Peter L. Sala, 2130 N. Commerce St., Stockton, archt. CD 1/17.

Calif., Long Beach—City, Bd. Educ., 715 Locust Ave., plans by Victor Seibert, 59 Prospect Ave., King Elementary School addn. **$288,066.** CD 11/18—ENR 12/9.

Calif., Long Beach—Long Beach City Council, City Hall, plans by Francis Hensel, 730 E. 3 St., 1 and part 2 story, 28,000 sq. ft., rein.-con. health center bldg. **$450,000.**

●**Calif., Los Angeles**—Los Angeles Bd. Educ., 1425 S. San Pedro St., plans by M. R. Lawson, 2009 W. 7 St., 5 rein.-con. Wilmington Area Junior High School bldgs., Wilmington **$1,250,000.**

Calif., Oakland—State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Will G. Corbett & A. W. Anderson, Bank of America Bldg., factory trades bldg. for Training School for Adult Blind, **$400,000.** CD 3/18/43—ENR 4/25/43.

Calif., Santa Rosa—Bellevue Union School Dist., 1987 Redwood Hy. South, plans by Clarence C. Caulkins, Rosenberg Bldg., Santa Rosa, school. **$250,000.** CD 3/13/47—ENR 4/3/47.

Calif., Torrance — Torrance Unified School Dist., Torrance, plans by Daniel, Mann & Johnson, 672 S. LaFayette Park Pl., Los Angeles, Seaside School, 16 classroom, cafeteria, kindergarten. **$400,000.**

Colo., Denver—School Dist. 1, Administration Bldg., Denver, plans by Smith, Hegner & Moore, consult. engrs. and archts., Colorado Bldg., Gilpin School, Thirtieth and Stout Sts. Over **$250,000.**

Colo., Ft. Collins—Colorado A. & M. College, Ft. Collins, plans by Sidney Frazier, Greeley, 2 story, bsmnt., 55x160 ft., steel superstructure, concrete, brick, chemistry bldg. addn. **$250,000.**

Colo., Grand Junction—School Dist. 1, Grand Junction, plans by Atchison & Kloverstrom, engrs. and archts., 1275 Monaco Parkway, Denver, 6 classroom addn. Tope School and 8 room addn. to Columbus School, **$400,000.** CD 6/18—ENR 7/7.

Conn., Bethel—Town, Paul Seiber, chn. Bldg. Comn., brick, steel high school addns., alterations. **$250,000.**

Conn., Bloomfield—Town, J. C. Hoover, chn. School Comn., Bloomfield, plans by Ebbets, Frid & Prentice, 862 Asylum Ave., Hartford, brick, steel school, **$250,000.**

Conn., Bristol—City Bristol Housing Auth., Fred O. Zurell, chn., plans by Russell F. Hills, 171 Barker St., Hartford, 70 family units, **$700,000.** C. M. Pfenning, City Hall, engr. CD 11/27—ENR 12/16.

Conn., Bristol—City, Karl A. Reichs, supt. Schools, Bd. Educ., plans by Harold A. Hayden, 175 Main St., 2 story, brick, steel. Mary A. Callen School addn., Pine and Middle Sts. **$250,000.** CD 2/1/45—ENR 2/22/45.

●**Conn., East Hartford**—Town, George E. Slye, chn. School Bldg. Comn., 200 Burnside St., plans by Perkins & Will, 309 W. Jackson St., Chicago, Ill., and John E. Nichols, 7 S. Main St., West Hartford, high school incl., gym and auditorium, **$1,500,000.** CD 8/31/44—ENR 9/21/44.

●**Conn., Meriden**—City, Howard E. Houston, City Hall, 2 school addns., and new elementary school, **$800,000;** brick, steel high school, **$500,000.**

Conn., Hampton — Town, Bd. Selectmen, Town Hall, plans by Henry S. Kelly, 242 York St., New Haven, 2 story, bsmnt., concrete consolidated school, Route 97, **$250,000.**

Conn., Milford—Town, Milford Housing Authority, Milford, plans by Leo F. Caproni, 1221 Chapel St., New Haven, fifty 2 story, bsmnt. garden aprtments, Old Post Rd. **$400,000.**

Conn., Mystic — State, Mystic Oral School, Alan Y. Crouter, supt. Mystic, brick, steel school unit, incl. physical educ. and vocational training, Mystic Oral School. **$800,000.**

Conn., Naugatuck—Town, Supt. Schools, Tuttle School, plans by Carl J. Malmfeldt & Assoc., 36 Pearl St., Hartford, 2 story, bsmnt., brick, steel school, **$250,000.** CD 10/5/45—ENR 10/18/45.

Conn., Niantic—State Farm for Women, Dpt. Correction, Niantic, 30 bed brick, steel, concrete hospital, State Farm for Women. **$450,000.**

Conn., Norwalk—State Comptroller, State Capitol, Hartford, brick, concrete armory. **$250,000.**

Conn., Stonington—State, Raymond A. Thatcher, comptroller, 114 State Capitol, Hartford, brick, steel armory. **$250,000.**

Conn., Westbrook—State Police Dpt., State Office Bldg., Hartford, police barracks. **$350,000.**

Conn., Woodbridge—Town, Bd. Selectmen, Town Hall, plans by Westcott & Mapes, Inc., 109 Church St., New Haven, 2 story, bsmnt., brick, steel Woodbridge Center School addn. **$250,000.**

Fla., Tampa—City, Curtis Hixon, mayor, Tampa, plans by Robert & Co., 96 Poplar St., Atlanta, Ga., office and storage. **$150,000.**

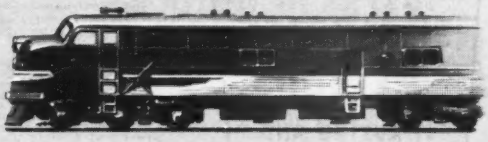
Ga., Columbus—State Dpt. Agriculture, Capitol Bldg., Atlanta, farmers market. **$250,000.**

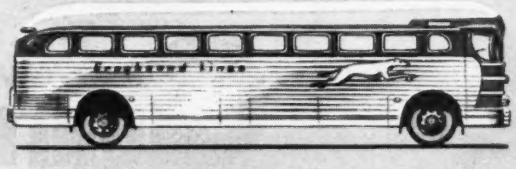
Idaho, Nampa—School Bd., Nampa, plans by Whitehouse & Price, Hutton Bldg., Spokane, Wash., 1 story, frame masonry school. **$360,000.** CD 2/4.

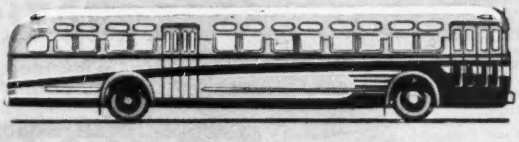
By Road and by Rail

THE TREND IS TO DIESEL

DIESEL LOCOMOTIVES—In 1938, there were 262 mainline Diesel locomotives. In 1948, the number was in excess of 5,000. Seven out of ten Diesel locomotives in passenger service, and three out of four hauling the new fast freights, bear the General Motors nameplate.*







DIESEL COACHES—In 1938, less than 200 Diesel coaches were in operation. By 1948, the number had multiplied to over 18,000. GMC production has accounted for more than 90 per cent of the total. Latest examples of GMC's Diesel coaches are the streamlined Greyhound inter-city coach and the long, low 55-passenger transit model, shown at left.*

DIESEL TRUCKS—In 1938, there were less than 500 Diesel trucks. By 1948, the number had jumped to 12,000. In recent months, GMC has produced nearly 30 per cent of the total. Shown below is a GMC 200-horsepower Diesel tractor.*

GMC Diesel trucks are powered by engines of the same basic design as the Diesel locomotives which pull many of the finest, fastest trains.

This advanced and exclusive GM 2-cycle design cuts Diesel weight without sacrifice of power, thus permitting greater payloads. It also provides outstanding fuel economy, low maintenance costs, exceptional dependability and long life.

GMCs are the only Diesel trucks offering a choice of four- and six-cylinder engines . . . specially engineered Diesel chassis . . . a selection of eight series of models. And, more important, GMC has had unequalled experience in equipping vehicles with these modern, time and money saving power plants.

GMC TRUCK & COACH DIVISION
GENERAL MOTORS

GM GENERAL MOTORS COACH

GMC TRUCKS

*Estimated figures based on latest available information

YOU'LL BUILD
Better ROADS *Faster*
AND BE
Money Ahead
WITH THE
SISALKRAFT METHOD
OF CURING AND PROTECTION

The SISALKRAFT Method gives you time and labor-saving advantages that cut your curing costs in half! Years of experience and research have developed improved application techniques. SISALKRAFT now is ready with new efficiency and new low costs for your paving season *this year!*

WRITE FOR THE NEW SISALKRAFT ROAD BOOK

It contains data you will value.

The SISALKRAFT Co., Dept. ENR
205 W. Wacker Drive, Chicago 6, Illinois
Please send the SISALKRAFT ROAD BOOK to:

NAME

FIRM NAME

ADDRESS

CITY, ZONE and STATE

THE SISALKRAFT CO.
Chicago 6 • New York 17 • San Francisco 5

Ill., Fulton—High School Dist., 306, Fulton, plans by Wm. F. Bernbrock & Assoc., Moline, high school, $360,000. CD 2/16/45—ENR 3/22/45.

Ill., Harrisburg—Harrisburg Twp. School Dist., c/o Secy., Harrisburg, brick, concrete, steel vocational bldg., gymnasium. $485,000.

Ill., Marion—Marion School Dist. 52., Eugene W. Morrison, pres. School Bd., concrete, brick, stone school $250,000.

Ill., Polo—Polo Central High School Dist. 215, voted $300,000 bonds school. $425,000. Smith Kraus & Strong, Urbana, archts. CD 4/9/46—ENR 6/13/46.

●**Ind., Anderson**—Bd. P. Wks., G. Lester McDonald, mayor, City Hall, 2½ story, 80x100 ft., brick, steel, rein.-con. municipal power plant, $1,000,000. Laramore & Douglas, 327 S. La Salle St., Chicago, engrs.

●**Ind., Evansville**—Bd. School Trustees, 200 N. W. 7 St. plans by Ralph Legeman, 10 Chestnut St., 2 story, bsmnt. Harper School. $1,000,000.

Ind., Indianapolis—Bd. Sanitary Engineers, City Hall, 2 story garage. $260,000.

Ia., Ames — Bd. Educ., Ames, 2 schools. $700,000.

●**Ia., Cedar Falls**—State Bd. Educ., Des Moines, plans by Nemmers, Clark & Spooner, Masonic Temple, Des Moines, women's dormitory, $800,000, mens dormitory, $500,000, at Iowa State Teachers College.

Ia., Cedar Falls—State Bd. Educ., Des Moines, power and heating plant imprvs., incl. plant addn., boiler, turbo-generator, switchgear, cooling tower, water treatment equip. $100,000. Brown Eng. Co., 322 K. P. Bldg., Des Moines, engr.

Ia., Fort Madison—Bd. Educ., Fort Madison, plans by Keffer & Jones, 202 Masonic Temple Bldg., Des Moines, 2 story Jefferson School addn., $250,000; 2 story Richardson School addn., $250,000.

Ia., Latimer—Consolidated School Dist., Latimer, plans by Wetherell & Harrison, Shops Bldg., Des Moines, school. $350,000.

Ia., Ottumwa — Bd. Educ., Ottumwa, Junior High School. $308,364.

Kan., Chanute—Neosho Co., Erie, plans by T. W. Williamson & Co., National Bank of Topeka Bldg., Topeka, hospital, $300,000. CD 10/22/47—ENR 11/11/47.

Kan., Emporia—Bd. Educ., Emporia, plans by Ruck & Lewis, 18 W. 6 St., East Side School. $300,000.

Kan., Hugoton—Stevens Co., Hugoton, memorial bldg. and court house combined, $275,000.

Kan., Overland Park—Bd. Educ., Overland Park, voted $278,000 bonds, school, Everett L. Peterson & Conrad J. Curtis, 1143 E. Armor St., Kansas City, Mo., archts. CD 12/27—ENR 1/20.

Kan., Wichita—Bd. Educ., Wichita, plans by Lorentz Schmidt, McVay & Peddle, Wichita, Horace Mann Intermediate School addn. $350,000.

Kan., Wichita—Bd. Educ., Wichita, plans by Forsblom & Parks, Beacon Bldg., L'Ouverture School. $265,000.

La., Denham Springs — Livingston Parish School Bd., c/o C. N. Durand, archt., Denham Springs, high school, $350,000.

La., Houma—State Bd. Educ., Baton Rouge, plans by Wogan, Bernard & de la Vergne, Pere Marquette Bldg., New Orleans, South Louisiana Trade School, $400,000.

●**Md., Baltimore**—University of Maryland, Fidelity Bldg., hospital addn. to psychiatric unit. $1,304,494.

●**Md., Cheverly**—Bd. Comrs. Prince George Co., Cheverly, hospital addn., heating plant, nurses home, public health bldg., Prince Georges General Hospital. $1,200,000.

●**Md., Hagerstown**—Bd. Comrs. Washington Co., Hagerstown, 7 story Washington County Hospital. $1,250,000.

Md., Salisbury — Bd. Comrs. Wicomico Co., Court House, Salisbury, Peninsula General Hospital addn., incl. laboratory, X-Ray dpt., business offices. $650,000.

Mass., Bedford—Town, School Dpt., plans by Adden, Parker, Clinch & Crimp, 177 State St., Boston, school. $250,000.

Mass., Boston—City, J. M. Mooney, supt. schools, 26 Norman St., 2 story, bsmnt. school, Readville, $250,000.

●**Mass., Boston**—City of Boston Housing Auth., 10 Post Office Sq., Boston, plans by John M. Gray, 175 High St., sixty 2 story frame, 120 unit veterans housing, Cottage and Washington Sts., Hyde Park, $1,250,000.

Mass., Boston—City Traffic Dpt., 134 North St., plans by John M. Gray Co., 175 High St., traffic bldg., Southampton and Atkinson Sts. $400,000. CD 1/20—ENR 2/17.

Mass., Chelsea — Commonwealth of Mass., P. Bldgs. Comm., 20 Somerset St., Boston, out patient bldg., Soldiers Home. $350,000.

LONG EXPERIENCE AND EXTENSIVE FACILITIES FOR ENGINEERING AND CONSTRUCTION IN GUNITE

- Lining for tunnels, mines, steel bins and hoppers
- Lining old, tuberculated, or clogged water mains to renew life and increase flow capacity
- Rehabilitation of dams, docks, bridges and walls
- Restoration of spalled, weathered or damaged concrete buildings
- Refractory linings for furnaces and stacks

Our Engineers are available for consultation

NATIONAL GUNITE CORPORATION
211 East 37th St. New York 16, N. Y.
101 West Dedham Street Boston 18, Mass.
418 Evans Building Washington 5, D. C.

GRIFFIN
GRIFFIN
WELLPOINT SYSTEMS
JETTING PUMPS
Distributors
GRIFFIN ENGINEERING CORP.
2016 E. Adams St.,
JACKSONVILLE, FLA.
GRIFFIN EQUIPMENT CO., INC.
548 Indiana Street,
HAMMOND, INDIANA
GRIFFIN WELLPOINT CORP.
881 EAST 141st ST. • NEW YORK 54, N. Y.
Phone: Mitrose 5-7704-5-6

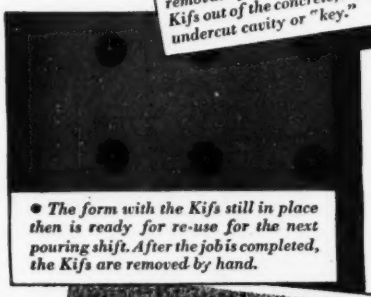
HOW KIFS...

.....the ingenious new elastic key forms....

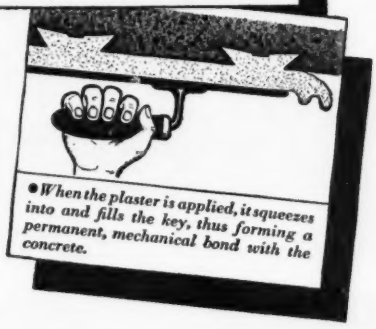
BOND PLASTER PERMANENTLY TO CONCRETE

• You simply nail Kifs six inches apart on the concrete forms. Electricians and other trades men can walk on them and perform their jobs, without damaging them.

• After the concrete has hardened, the removal of the forms pulls the elastic Kifs out of the concrete, leaving a clean, undercut cavity or "key."



• The form with the Kifs still in place then is ready for re-use for the next pouring shift. After the job is completed, the Kifs are removed by hand.



• When the plaster is applied, it squeezes into and fills the key, thus forming a permanent, mechanical bond with the concrete.

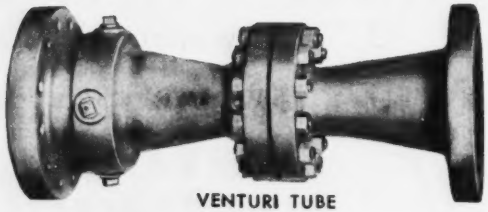
• Kifs cut costs . . . materially as compared with metal lath construction; save time; save plaster; save building height . . . four inches for every story; save capital investment. *They meet all Federal specifications,* as at present advised.

Kifs are rented to contractors on a time basis. For complete information about costs, installation specifications and procedures, write us.

Franchise Service Distributors Wanted:
We invite inquiry from reputable individuals or firms familiar with the building construction field and with the architectural profession who can represent us as leasing agents and service representatives in principal cities.

BUFFALO PRODUCTS *Inc.*
A subsidiary of Frontier Industries, Inc.
319 BABCOCK ST., BUFFALO 10, N. Y.

MEASURE FLOWS WITH *GREAT* ACCURACY!



VENTURI TUBE

MO METER

The correct design and careful workmanship of Simplex Venturi Tubes insure stable coefficients over wide velocity ranges, enabling the accompanying meter to measure flow with extreme accuracy. The high efficiency in the utilization of the differential pressure head is the result of more than 40 years of manufacture and research by this company.

Simplex Type MO Meters, when used in conjunction with Simplex Venturi Tubes as primary devices, guarantee the utmost accuracy in flow measurement over long ranges. They can be furnished to measure accurately over ranges of 20 to 1, 25 to 1, 28.5 to 1 or 32.5 to 1.

Where flow ranges are long, a single meter often will be sufficient where two or more ordinary instruments would otherwise be required.

For full information and bulletins, write to the Simplex Valve & Meter Company, 6751 Upland Street, Philadelphia 42, Pa.

SIMPLEX

VALVE AND METER COMPANY

●**Mass., Chicopee**—City Housing Auth., Chicopee, plans by Henry J. Tessier & Morris W. Maloney, 226 Dwight St., Springfield, 150 unit housing. **$1,500,000.**

Mass., Clinton—Town Housing Auth., Clinton, plans by Cornelius W. Buckley, 311 Main St., Worcester, 24-36 unit housing. **$350,000.** Charles A. Perkins, 198 High St., site engr. CD 9/28—ENR 10/28.

Mass., Concord—Town, Whittemore Brown, chn. General Bldg. Com., plans by Somes, Griswold, Boyden, Wilde & Ames, 53 State St., Boston, school, Laurel St., **$350,000.**

Mass., East Longmeadow — Town, School Dpt., East Longmeadow, Senior High School, N. Main St. Over **$250,000.**

Mass., Fairhaven — Town, supt. Schools, North Fairhaven, Oxford School addn., North Fairhaven. Over **$250,000.**

●**Mass., Fall River**—City of Fall River Housing Auth., Ray Holmes, Fall River, plans by E. M. Corbett, 49 Purchase St., and S. T. Dubintsky, 41 N. Main St., 196 unit housing Proj. 200-2, South End. **$2,000,000;** 149 units housing, North End, **$1,500,000.**

Mass., Lancsboro — Town, School Dpt., Lancsboro, plans by Harry J. Koralund, 153 Nahatan St., Norwood, consolidated school, Brennans Hill. Over **$250,000.**

●**Mass., Lawrence**—City of Lawrence Housing Auth., John Sirois, exec. dir., City Hall, plans by Pearson Alter & James, 351 Essex St., 256 unit veterans housing, Osgood and Phillips Sts. **$2,921,000.**

Mass., Lincoln—Town, Vincent Nevine, 1669 Lonsdale Ave., brick, steel school. **$250,000.**

Mass., Lynn—City of Lynn Housing Auth., John Cavanaugh, chn., 58 Adams St., plans by Lipinski & Valtz, 113 Market St., veterans housing, Proj. 200-3, Adams St. Over **$250,000.** CD 1/21—ENR 2/17.

Mass., Lynn—City of Lynn Housing Authority, John Cavanaugh, chn., 58 Andrews St., project abandoned, 54 unit, veterans housing, Project No. 200-2, Green and Howard Sts. Lipinski & Valtz, 113 Market St., archts. CD 1/6—ENR 1/20.

Mass., North Attleboro—Town, School Dpt., North Attleboro, John Woodcock School addn., Bank St. and Richards Ave.

Mass., Plainville — Town, Bd. Selectmen, Town Hall, 2 story, bsmnt., brick, steel, concrete school, **$250,000.**

Mass., Quincy—City, School Dpt., 70 Coddington St., plans by Coletti Bros., 687 Boylston St., Boston, school. Over **$250,000.**

Mass., Somerville—City School Dpt., Highland Ave., plans by Wm. L. Gavin, 38 B Brattle St., Cambridge, Pope School, Knapp Elementary School, Prescott School, Burns School, Morse Elementary School, Over **$250,000** each. CD 11/29/46—ENR 12/12/46.

Mass., Stoneham—Town of Stoneham Housing Authority, John Finnegan exec. dir., Town Hall, plans by Drummey, Duffill, Inc., 80 Boylston St., Boston, 48 units, 2 story, bsmnt. veterans housing, Calthea St. **$480,000.** CD 11/11—ENR 11/25.

Mass., Stoughton—Town of Stoughton Housing Auth., Stoughton, plans by August J. Schumacher, 102 Mt. Auburn St., Cambridge, 50 unit veterans housing. **$500,000.**

Mass., Wakefield—Town, Municipal Electric Dpt., Town Hall, plans by Edward M. Bridge, 131 State St., Boston, brick, steel commercial bldg., North Ave. **$250,000.**

Mass., Wakefield—Town, Town Hall, plans by Edward M. Bridge, 131 State St., Boston, 1 and 2 story, 52x101 ft., brick police station, between Centre and Mechanic St. **$250,000.**

Mass., Williamstown—Town of Williamstown School Dpt., F. V. Grant, supt., Williamstown, plans by Morris W. Maloney, 226 Dwight St., Springfield, Vocational-Agricultural School. Over **$250,000.** CD 2/7/46.

Mass., Wollaston (Br. Boston)—City, Supt. Schools, 70 Coddington St., Quincy, plans by Coletti Bros., 687 Boylston St., Boston, school addn. Over **$250,000.**

Mass., Worcester — City, supt. Schools, Worcester, plans by Frank H. Cutting, 29 Pearl St., 2 story, bsmnt., 31x60 ft. and 73x82 ft. gymnasium, school addn., May St. Over **$250,000.**

Mass., Worcester—City Housing Auth., Raymond P. Harold, chn., City Hall, 300 unit housing. **$300,000.**

●†**Mich., Detroit** —National Cancer Hospital of America, Inc., 269 Mack Ave., plans by Derrick & Gamber, 515 Hammond Bldg., cancer hospital. **$10,000,000.**

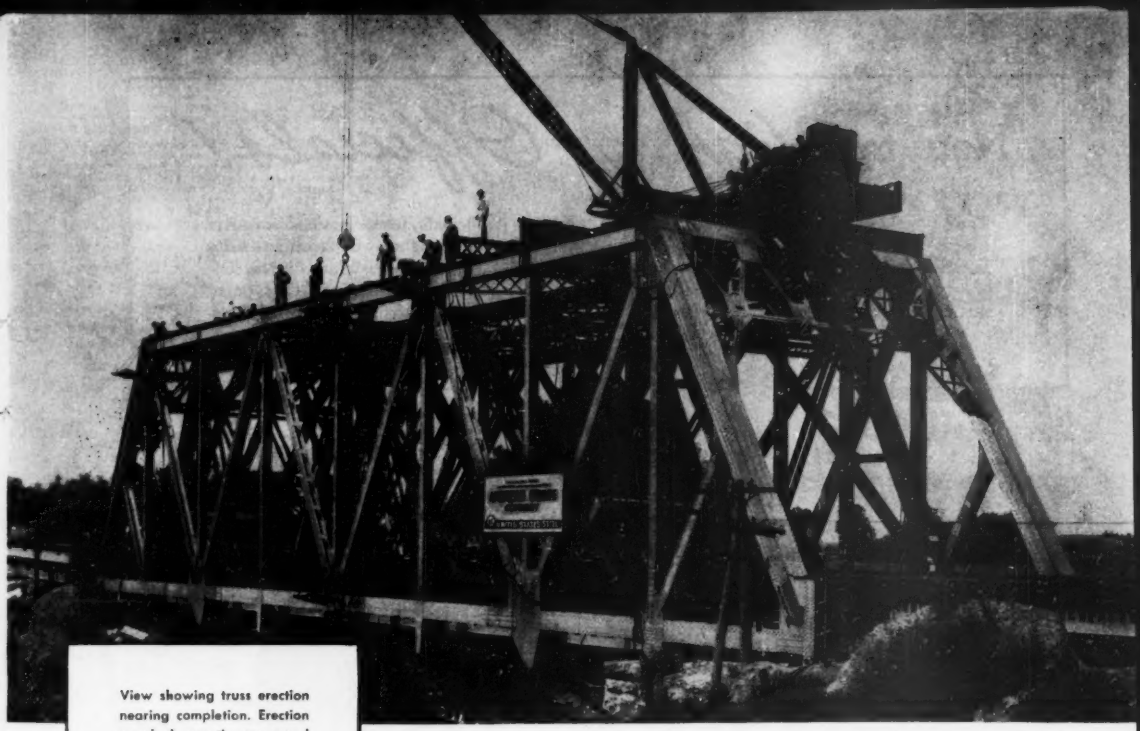
Mich., Lake Orion—Lake Orion Consolidated School Dist., 17-room school. **$480,000.**

Mich., Walled Lake—Walled Lake Consolidated School Dist., Walled Lake, 2 schools, school addns. **$300,000.**

Minn., Grand Rapids — Itasca Co., R. J. Whaling, aud., Grand Rapids, plans by Jyring & Jureness, Hibbing, court house. **$300,000.** CD 2/14/45—ENR 3/8/45.

Minn., South St. Paul—Bd. Educ., T. T. Simley, supt., $1,725,000 bond election Mar. 22, industrial arts bldg., physical education field, high and junior high school alterations, junior high school, **$1,500,000.** Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, archts.

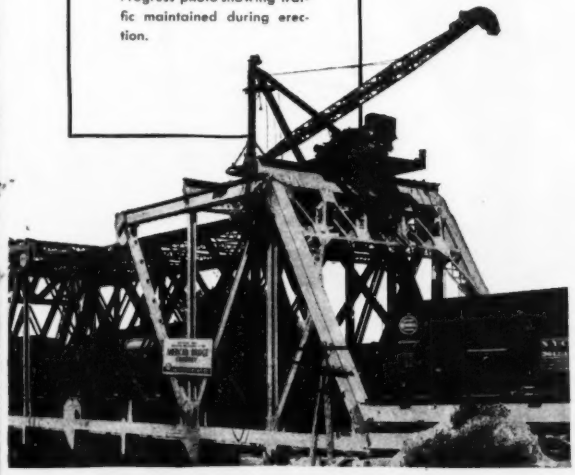
Mo., Columbia—Bd. Educ., Columbia School Dist., Neil E. Aslin, supt. Schools, Columbia, sketches by Marshall & Brown, 114 W. 10 St.,



View showing truss erection nearing completion. Erection was by locomotive crane and stiffleg derrick. Closure at center, top chord section was made by jacking at near end of trusses.

Bridge designed for Cooper's E-65 loading to current AREA Specifications. Estimated weight 600 tons.

Progress photo showing traffic maintained during erection.



New bridge "swallows" old

Rail traffic was uninterrupted when American Bridge Company erected this 190' double-track truss span around the old span across the Boyer River near Arion, Iowa.

In addition to designing, fabricating and erecting this and two other nearby bridges for Chicago and North Western Railway Company, American Bridge removed the three old spans.

We cite this project as further evidence that for fabrication and erection efficiently done, you can depend on American Bridge.

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

Contracting Offices in: AMBRIDGE · BALTIMORE · BOSTON · CHICAGO · CINCINNATI · CLEVELAND · DE
DETROIT · DULUTH · ELMIRA · GARY · MINNEAPOLIS · NEW YORK · PHILADELPHIA
PITTSBURGH · PORTLAND, ORE. · ST. LOUIS · SAN FRANCISCO · TRENTON
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

AMERICAN BRIDGE

UNITED STATES STEEL

Note to *Highway Officials!*

The advertisement below is reproduced from a recent issue of The Saturday Evening Post. It tells why farm-to-market roads are so vital in America's highway system—helps to "sell" this country on the importance of good all-weather, traffic-safe, feeder roads. Year after year, experienced highway departments write Tarvia* road tar into their plans for the construction and maintenance of this type of road. Ask the Barrett field man for details.

Here's why your milk was fresh this morning
The route that leads from the cow to the breakfast table begins with a country road.
Upon the condition of this road depends the whole system of fast transportation that brings you fresh milk and other foods daily.
The United States has 2½ million miles of such "feeder" roads. Barrett Tarvia* road tar has been an important factor in building these roads and keeping them in good condition.
Its low cost, durability and ease of application by local labor, using local materials, bring good roads within the means of any rural community.
It is one of many Barrett basic tar products serving American progress.
THE BARRETT DIVISION
ONE OF AMERICA'S GREAT BASIC BUSINESSES
Barrett

THE BARRETT DIVISION
Allied Chemical & Dye Corporation
40 Rector Street, New York 6, N. Y.

New York · Chicago · Birmingham · Detroit · Philadelphia · Boston · Rochester · Cleveland · Youngstown · Ironton, O. · Syracuse · Buffalo Bethlehem, Pa. · Portland, Me. · Bangor, Me. · Norwood, N. Y. · Oneonta, N. Y. · Elmira, N. Y. · Cromwell, Conn. · Norwich, Conn. · In Canada: THE BARRETT CO., LTD. · Montreal · Toronto · Winnipeg · Vancouver

Barrett * Tarvia ROAD TAR

*Reg. U. S. Pat. Off.

Kansas City, brick, concrete, stone, steel school, northwestern part of city. **$250,000-$300,000.** CD 2/4—ENR 2/17.

●**Mo., Independence**—City, Roger C. Sermon, mayor, City Hall, and Chamber of Commerce, Howard Bennett, pres., plans by Robert R. Weatherford, Independence, 2 story, brick, concrete, stone President Truman Memorial Library, Museum and Community Bldg. **$3,500,000.** CD 2/10—ENR 2/3.

●**Mo., Jefferson City**—State, John F. Powell, dir. P. Bldg., State Capitol, Jefferson City, 12 story, bsmnt., concrete, steel office, 2 story L to house cafeteria, auditorium and hearing room. **$3,000,000.** CD 2/17/47—ENR 3/6/47.

Mo., Jefferson City—Lincoln University, Dr. Sherman D. Scruggs, pres., Jefferson City, appropriation asked for Missouri General Assembly, rein.-con., brick, steel, stone law school **$450,000.**

Mo., Kirkwood (St. Louis, Zone 22, P. O.)—Kirkwood School Dist., Bd. Educ., Floyd W. Hendricks, supt. Schools, 702 S. Kirkwood Rd., voted **$330,000** bonds, Oakland School, Lockwood and Sappington Rds. and Robinson school addn., 803 S. Couch Ave. Bonsack & Pearce, Inc., 308 N. 6 St., St. Louis, Zone 1, archt. CD 2/11.

Mont., Red Lodge—Carbon Co., Red Lodge, plans by Cushing & Terrell, 212½ N. Broadway, Billings, 1 story, bsmnt., 44 x 160 ft. and 42 x 57 ft. wings, frame, brick veneer, L-shaped hospital **$285,000.** Reginald T. Hurdle & Son, 816 N. 22 St., Billings, engrs. CD 12/13—ENR 12/23, under Commercial Bldgs.

Neb., Gering—Bd. Educ., Gering, voted bonds, school. **$295,000.** Meginnis & Schaumberg, Federal Securities Bldg., Lincoln, archts. CD 11/4—ENR 12/9.

Neb., McCook—Bd. Educ., McCook, voted bonds, school. **$360,000.** J. W. Radotinsky, Natl. Bank of Kansas Bldg., Kansas City, Kan., archt. CD 12/27—ENR 1/20.

N. J., Mullica Hill—Harrison Twp. Bd. Educ., Mullica Hill, plans by Harold M. Klaiss, 7 N. Maple Ave., Woodbury, school. **$300,000.**

N. Y., Babylon—Union Free School Dist. 7, Babylon, school addn. **$250,000.**

●**N. Y., New York**—Dpt. P. Wks., Municipal Bldg., plans by Shreve, Lamb & Harmon, 11 W. 44 St., Zone 18, 12 story supreme court bldg. on block bounded by Adams, Fulton, Washington and Johnson Sts. **$12,500,000.**

N. Y., New York—New York City Div. of Real Estate, Municipal Bldg., Zone 7, plans by Irving Berg, Grand Central Terminal Bldg., Zone 17, altering houses at 1626 to 1668 Third Ave., **$274,000.**

N. C., Fairmont—Bd. Comrs., Robeson Co. D. G. Kinlaw, clk., Lumberton, bond election Mar. 29, school. **$295,000.** CD 2/11.

N. C., Sanford—Sanford School Bd., M. A. McLeod, supt. Schools, high school group bldgs., incl. gym, vocational shops, school, etc. Over **$250,000.**

●**N. C., Smithfield**—Johnston Co. Memorial Hospital, Smithfield, plans by George Watts Carr, Durham, hospital. **$1,200,000.** CD 9/27—ENR 10/14.

N. D., Minot—State Bd. Higher Educ., Bismarck, plans by S. M. Houkom, 716 7 St. South, Fargo, physical educ. bldg. at State Teachers College. **$260,000.**

O., Akron—Bd. Educ. N. Broad St., plans by Milton Murphy, c/o owner, East High School addn. **$691,000.** CD 12/10/45—ENR 2/14/46.

○**O., Columbus**—Bd. Comrs. Franklin Co., Courthouse, plans by Ralph C. Kempton, 50 W. Broad St., courthouse. **$1,500,000.** CD 11/16/45—ENR 1/3/46.

O., Columbus—Ohio State University, N. High St., plans by Sims, Cornelius & Schooley, 2901 N. High St., 3 story, bsmnt. alternate 4th story, 48 x 152 ft. brick, aluminum electrical engineering bldg. and equip. **$600,000.** Howard Dwight Smith, c/o owner, university archt. CD 11/17/44—ENR 11/30/44.

O., Upper Arlington—Bd. Educ., Upper Arlington, plans by Benham, Richards & Armstrong, 167 E. State St., Columbus, school addn. **$748,000.** CD 11/11—ENR 11/25.

Okla., Alva—Bd. Educ., Alva, high school. **$250,000.** CD 4/4/46.

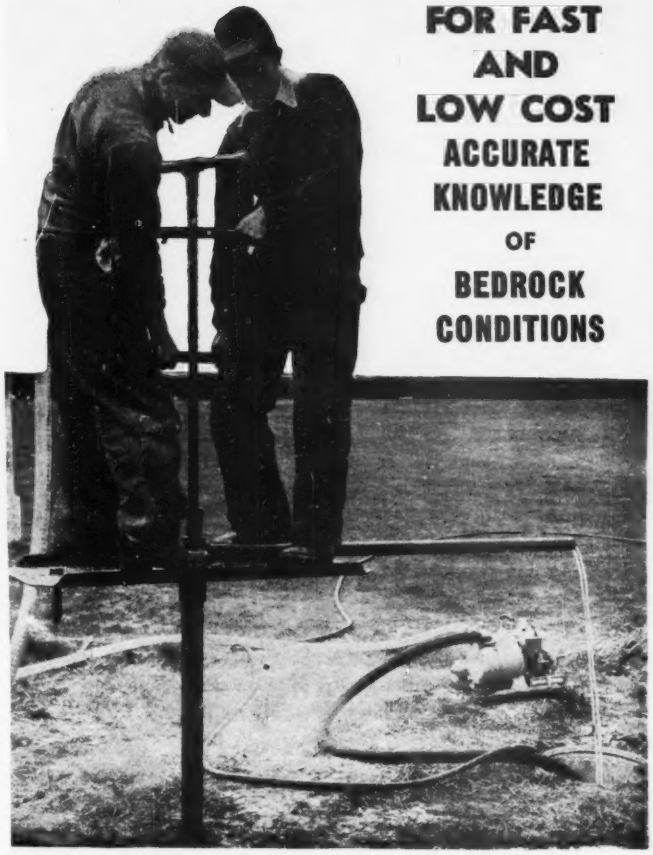
●**Okla., Norman**—Bd. Regents University of Oklahoma, Norman, plans nearing completion by Winkler & Reid, Kerr McGee Bldg., Oklahoma City, memorial library. **$1,000,000.** CD 12/19/46—ENR 2/14/46.

●**Pa., Clarion**—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, constructing state hospital for rehabilitation of veterans. **$5,000,000.** A. F. Jones, c/o owner, ch. engr.

Pa., Greenock — Greenock School Dist., Greenock, school. **$293,775.** Wm. J. Finley, State Capitol, Harrisburg, dist. engr. CD 2/27/46—ENR 5/6/46.

●**Pa., Harrisburg**—Dpt. Property & Supplies, 18 and Herr Sts., plans by Lawrie & Green, 321 N. Front St., disturbed patients bldg. at Harrisburg State Hospital. **$1,115,000.** A. J. Jones, c/o owner, ch. engr. CD 3/20/47—ENR 4/3/47.

Pa., Hazleton—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, plans by Lacy, Atherton & Davis, 6 and Maclay Sts., Harrisburg, nurses home addn. at Hazleton State Hospital. **$327,000.** A. F. Jones, c/o owner, ch. engr. CD 1/27—ENR 2/13.



FOR FAST AND LOW COST ACCURATE KNOWLEDGE OF BEDROCK CONDITIONS

Empire **HYDRAULIC TESTING DRILL**

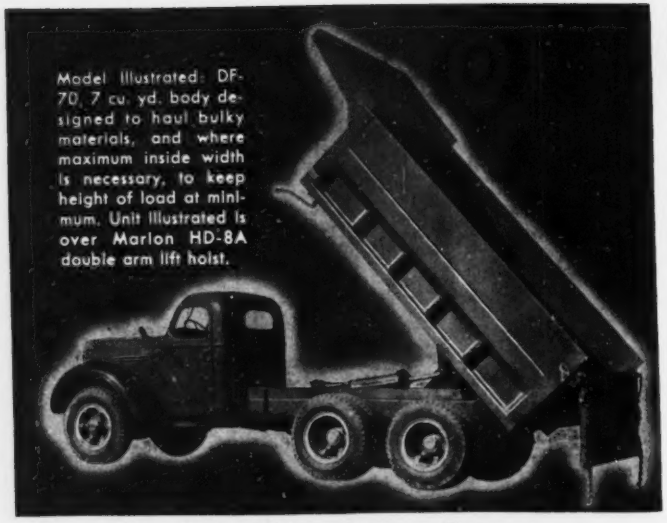
When you drill to bedrock you want to know your subsurface conditions—but at LOW COST. Here is the rig that you can transport and set up easily and economically in rough country, with a couple of men if necessary. Designed especially for this class of work. Extensively used by U. S. and State Governments and many others. Extremely strong and simple.

•Easy to transport, setup, take down

JUST THE DRILL FOR ROUGH COUNTRY

Outfit weighs only a total of 800 lbs. for 50 ft. drilling depths. Gives accurate samples of materials drilled. Every part can be handled by one or two men. Send for descriptive circular giving complete specifications. It will help if you advise us regarding drilling depths and general nature of work.

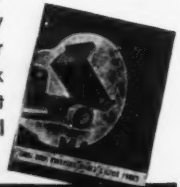
NEW YORK ENGINEERING COMPANY
75 WEST ST., NEW YORK, N. Y.
Works YONKERS, N. Y.



Model Illustrated: DF-70, 7 cu. yd. body designed to haul bulky materials, and where maximum inside width is necessary, to keep height of load at minimum. Unit Illustrated is over Marion HD-8A double arm lift hoist.

Profitable Hauling Starts with "On The Job" Design

It's easier to meet the profit problems of your hauling job with Marion. Because Marion units are developed by engineers who go out "on the job" under actual working conditions . . . they are designed for bigger payloads with fewer breakdowns under the roughest treatment. Ask your Marion Distributor about the Marion unit designed "on the job" to meet your special requirements, or write direct.



MARION
DUMP BODIES and HYDRAULIC HOISTS

GET MORE DETAILS NOW
Just mail a post card or letter for the complete Marion catalog, or ask your Marion Distributor.

MARION METAL PRODUCTS CO., MARION, OHIO

The BELMONT IRON WORKS

Engineers — Fabricators — Erectors
Contractors — Exporters
Cable address—Beliron

STRUCTURAL STEEL
BUILDINGS & BRIDGES
RIVETED — ARC WELDED
Shops — Eddystone

PHILADELPHIA
Main Office
Philadelphia 46, Pa.

AISC

ROYERSFORD
New York Office
44 Whitehall St.,
N. Y. 4, N. Y.

GUNITE
PNEUMATICALLY PLACED CONCRETE
DENSE · DURABLE · HIGH STRENGTH

for
Restoring Disintegrated Concrete
Dam, Dock and Bridge Repairs
Steel Encasement and Fireproofing
Sewer, Water Pipe and Penstock Linings
Stack and Bunker Linings
Wood Pile Casings—Pressure Grouting
Prestressed Tanks and Silos

Get in touch with us for engineering data and estimates

GUNITE CONSTRUCTION CORPORATION
420 LEXINGTON AVE. NEW YORK 17, N.Y.

Pa., Lancaster—Comrs. Lancaster Co., Lancaster, high school. **$325,700.** Wm. J. Finley, State Capitol, Harrisburg, dist. engr.

Pa., Lancaster—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, Thaddeus Stevens Trade School addns., imprvs. **$325,000.**

Pa., Muncy—Dpt. Property & Supplies 18 and Herr Sts., Harrisburg, plans by C. J. Lapplev, Front and Harris Sts., Harrisburg, industrial bldg. at State Industrial Home for Women. **$275,000.** A. F. Jones, c/o owner, ch. engr. CD 3/29/46—ENR 6/13/46.

●**Pa., Norristown**—Comrs. Montgomery Co., Courthouse, plans by E. Lane Crawford, Norristown Penn Trust Bldg., courthouse addn. **$2,000,000.** Trautwein & Howard, 1411 Walnut St., Phila., assoc. archts. Henry P. Friend, co. engr. CD 7/1—ENR 7/22.

●**Pa., Shamokin**—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, addnl. wing to main bldg. of the Shamokin State Hospital. **$1,140,500.** A. F. Jones, c/o owner, ch. engr.

Pa., Waymart—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, plans by George M. D. Lewis, 520 Scranton Life Bldg., Scranton, tuberculosis hospital, at Fairview State Hospital. **$600,000.** A. E. Jones, c/o owner, ch. engr. CD 2/15—ENR 3/3.

R. I., East Providence—Town, C. T. Thompson, supt. 2 five room, brick, steel schools, Riverside and Rumford. **$250,000.**

R. I., Middleton—Town, C. B. Copeland, secy. School Dpt., Middleton, brick, steel school. **$250,000.**

R. I., Richmond—Town, Charles Edmund, chn., Richmond, plans by Monahan & Meikle & Johnson, 255 High St., Pawtucket, 1 story, bsmnt., brick, steel school. **$250,000.**

S. C., Florence—Florence-Darlington TB Sanatorium, c/o Lafaye, Lafaye & Fair, archts., 1226 Sumter St., Columbia, tuberculosis sanatorium. **$600,000.**

Tenn., Nashville—Tennessee National Guard, c/o Adjutant Gen. C. A. Anderson, Nashville, motor vehicle maintenance plant. **$250,000.**

●**Tex., Amarillo** — Amarillo Housing Auth., Amarillo, 800 housing units. Approx. **$4,800,000.** Application filed for PHA funds.

Tex., Anahuac—Chambers Co., c/o Judge, Courthouse, plans by Emory S. White, 625 M & M Bldg., Houston, 1 story, 20 bed masonry hospital. **$275,000.** Walter P. Moore, 4605 Montrose St., Houston, structural engr. Howard, Johnson & Kelley, Scanlan Bldg., Houston, mechanical engrs. CD 7/19—ENR 7/29.

●**Tex., Austin**—University of Texas, Austin, plans by Mark Lemmon, 1210½ Main St., Dallas, administration, **$1,500,000**; law school, **$1,500,000**; classroom, **$1,700,000**; 2nd classroom, **$1,275,000**; journalism, **$375,000**; service storage bldg. **$750,000**; pharmacy school, **$1,250,000.** CD 8/16/44—ENR 9/7/44.

Tex., Baytown—Baytown Independent School Dist., Baytown, plans by Herbert Voelcker & Assoc., archt and consult. engrs., 2401 San Jacinto St., Houston, 72x107 ft., cafeteria and 160x170 ft. vocational bldg., brick, stucco, con. slab fdns. **$290,000.**

●**Tex., Beaumont**—Beaumont Housing Auth., 1860 Louisiana St., 700 rental housing units. Approx. **$4,200,000.** Application filed for PHA funds.

●**Tex., Borger**—Borger Housing Auth., Borger 250 low-cost rental housing units. Approx. **$1,500,000.** Application filed for PHA funds.

●**Tex., Brownwood** — Brownwood Housing Auth., Brownwood, 300 low-cost rental housing units. Approx. **$1,800,000.** Application filed for PHA funds.

Tex., Carthage—Carthage Independent School Dist., Carthage, plans by Thomas, Jameson & Merrill, 820 N. Harwood St., Dallas, masonry elementary and high school for negroes. **$325,000.**

●**Tex., Commerce**—East Texas State Teachers College, Commerce, plans by George L. Dahl, 1920½ Main St., Dallas, masonry administration bldg., **$700,000**; masonry library, **$450,000.**

Tex., Crystal City—Crystal City Independent School Dist., Crystal City, plans by Charles Huie, Jr., 1805 Transit Tower, San Antonio, school. **$275 000.**

Tex., Elmendorf—Bexar County Common School Dist. 6, Precinct 4, c/o Clyde E. Smith, supt., 1411 Highland Blvd., San Antonio, plans by J. Fred Buenz, 1517 Majestic Bldg., San Antonio, high school. **$325,000.**

Tex., Fort Worth—Fort Worth Childrens Hospital, 2400 Winton Terrace West, plans by C. O. Chromaster, 408 Century Bldg., hospital bldg. facilities, etc. **$175,000.** CD 5/14/43—ENR 5/20/43.

Tex., Greggton—Bd. Educ., John Schroeder, pres., Greggton, plans by Preston M. Geren, 905 N. P. Anderson Bldg., Fort Worth., Pine Tree High School and Gymnasium. **$360,000.**

Tex., Helotes—Bexar County Common School Dist., c/o Clyde Smith, 1411 Highland Blvd., San Antonio, plans by J. Fred Buenz, 1517 Majestic Bldg., San Antonio, high school. **$300,000.** CD 1/13—ENR 2/3.

Tex., Houston—Houston Independent School Dist., 1600 Washington St., plans by Stayton Nunn, co-ordinating archt., 2017 W. Gay St., masonry, concrete, steel 15 room Garden Villas School addn.; remodeling school. **$300,000.** Marvin Moore, 2008 W. Alabama St., consult. engr. CD 6/23/47—ENR 7/10/47.

It's portable . . . It's packaged

PUT IT WHERE YOU NEED *Steam*

★ READY MIX CONCRETE PLANTS ★ BITUMINOUS MIXING PLANTS
★ PILE-DRIVING ★ ASPHALT STORAGE TANKS ★ TANK CAR HEATING
★ AGGREGATE HEATING ★ WINTER CONCRETE OPERATIONS

COMPLETELY packaged unit — portable — suitable for a wide range of construction work such as — asphalt plant, storage and tank car heating, aggregate heating, ready or hot mix plants, pile driving, and winter concrete work for both hot water and steam for curing — this Cleaver-Brooks Steam Generator will save time and money on many of your operations.

Available in 80 HP and 125 HP—150 PSI. (For permanent installation a capacity range of 15 to 500 HP is available in other Cleaver-Brooks packaged steam generators.)

Clean, smokeless and require no ash disposal. Provide the easiest fuel handling. Complete safety protection — a four-pass boiler designed in accordance with A. S. M. E. code; inspected and approved by Hartford Steam Boiler Inspection and Insurance Company.

CLEAVER-BROOKS COMPANY
389 E. Keefe Ave., Milwaukee 12, Wis.

Cleaver-Brooks

PORTABLE • PACKAGED STEAM GENERATORS

80 H.P. — 125 H.P. — 150 P.S.I.

EXPRESSLY DESIGNED FOR CONSTRUCTION OPERATIONS

- Fast Steaming
- 80% Efficiency
- Low Cost Operation
- Light-Weight
- Skid Mounting for Truck or Trailer
- Low Fire Start
- Modulating Control of fuel oil — assures constant steam pressure
- Electric Ignition
- Burn any Fuel Oil up to Commercial standard CS12-48
- Self-Contained Fuel Tanks
- Full Weather Protection
- Factory Finished and Tested
- Choice of Gas or Electric Motor

Send today for illustrated catalog on the Cleaver-Brooks Model LFM Steam Generators.

Built by the Pioneers and Originators of Packaged Steam Generators — Tank Car Heaters — Bituminous Boosters

Is this your dredging problem?

Do you want to clean out water reservoirs? Deepen lakes or channels? Restore eroded beaches? Fill in undesirable lowlands? Beautify parks and lakes? In short, whatever your particular problem, Morris Engineers can help you solve it—economically.

MORRIS
PORTABLE DREDGE

Easily dismantled . . . easily moved from job to job . . . city to city.

...Every Morris Dredge is individually designed for your particular needs...

In this way—and this way alone—you can be sure that the dredge will do the job it's meant for—dependably, efficiently, economically. For every engineer knows that the main cause of pump and dredge failure is to use it for a job for which it was never intended or designed.

This is why Morris builds your dredge from scratch . . . to fit your definite requirements. We study your problem . . . design the dredge . . . build it complete with either electric, Diesel or gasoline power . . . with portable or permanent hull . . . rigging, hoist, spuds, ladder, ladder head and cutter . . . and then install it with all necessary piping and fittings.

What's more, we furnish an operator for an initial period of time until your own operator learns how to operate and maintain the dredge.

WRITE TODAY for full information about Morris Dredges. Ask for Bulletin 177.

MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Sales Offices in Principal Cities

MORRIS *Centrifugal Pumps*

●**Tex., Houston**—Port Comn., W. F. Peacy, dir., c/o Wharf 13, inbound bulk loading plant, **$1,000,000.** Nelson A. Davis Co., 343 S. Dearborn St., Chicago, Ill., engrs. CD 8/28/47—ENR 9/18/47.

Tex., Liberty — Liberty Courthouse, voted $150,000 bonds hospital unit of 15 addnl. beds, **$250,000.** Gataura, Stromber & Gibson, 513 Scanlan Bldg., Houston, archts. CD 3/6/47—ENR 3/20/47.

Tex., Marlin — Marlin Independent School Dist., plans by Thomas, Jameson & Merrill, 820 N. Harwood St., Dallas, masonry, steel, concrete school; high school and Negro School addns. **$300,000.**

Tex., Seminole—Seminole Independent School Dist., c/o Ted Edwards, supt., Seminole, plans by Wilson & Patterson, 209 Majestic Bldg., Fort Worth, 1 story, brick school. **$400,000.**

Tex., Taft—Civic and Service Clubs, Taft, 25 bed masonry, steel, concrete hospital. **$250,000.**

●**Tex., Wichita Falls**—City and Wichita Co. G. Fairtrace, mgr., plans by Jesse G. Dixon & Ray Arnhold, Wichita Falls, hospital. **$1,200,000.** CD 10/26/45—ENR 11/15/45.

●**Tex., Wichita Falls**—Wichita Falls Housing Auth., Wichita Falls, 500 low-cost rental housing units. Approx. **$3,000,000.** Application filed for PHA funds.

Utah, Brigham City—Boxelder Co. School Bd., Brigham City, plans by Karl L. Krusmark, Brigham City, Central School. **$400,000.** Kenneth Weight, supt. schools.

Va., Leesburg—Loudoun Co., Leesburg, plans by Eubank & Caldwell, Boxley Bldg., Roanoke, high school. Over **$250,000.** CD 8/28/47—ENR 9/18/47.

●**Va., Elko**—State Bd. Health, Richmond, addnl. hospital for Negro tuberculosis patients. **$2,500,000.**

Va., Petersburg—Petersburg Hospital Auth., c/o H. Coleman Baskerville, archt., Central National Bank Bldg., Richmond, hospital. **$800,000.**

●†**Wash., Longview**—**Yards & Docks** Annex. Navy Dpt., Arlington, Va., 150 x 200 ft. training center **$1,000,000.**

●**Wash., Olympia**—State Capitol Comm., Olympia, office. **$1,250,000.**

Wash., Toppenish—School Bd. Toppenish, plans by W. H. Rothe, 897 W. Yakima Ave., Yakima, high school. **$296,000.** CD 1/31.

Wash., Toppenish — Washington National Guard, Fort Lewis, armory, **$300,000;** ordnance bldg. **$62,000.**

Wash., Yakima—Ahtanum Valley School Dist. 127, Route 7, school. **$420,000.**

Wis., Madison—Bd. Water Comrs., City Hall, plans by H. C. Balch, 16 N. Carroll St., 2 story, 118x169 ft. brick arch. concrete service bldg., concrete fdn. Mead & Hunt, 550 State St., consult. engrs.

Wis., Superior—Bd. Educ., Superior, 2 story school. **$600,000.**

Wis., Wauwatosa—Bd. Educ., Wauwatosa, plans by Ebling, Plunkett & Keymar, 1220 N. Milwaukee St., Milwaukee, Zone 2, Roosevelt School addn. **$300,000.** CD 2/8/45—ENR 2/22/45.

†**Alaska, Anchorage**—Bureau Reclamation, Dpt. Interior, Interior Bldg., 19 and C Sts. N. W., Wash. 25, D. C., lodge **$250,000,** skit hut **$25,000,** toboggan slide **$30,000,** skating hut **$22,500,** offices and residences for employees **$100,000,** airplane landing float **$24,500,** road **$50,000,** in connection with proposed Eklutna hydroelectric proj., near here.

●**Alta., Calgary**—Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., 200 houses, Currie Barracks, 24 St. W. Approx. **$1,200,000.**

●**Alta., Edmonton**—Central Mortgage & Housing Corp., 506 Kensington Bldg., Winnipeg, Man., 500 houses, Approx. **$3,500,000.** H. C. Spence, c/o owner, engr.

Alta., Edmonton—Municipality, pathological and maternity unit addns., to Royal Alexandra Hospital, **$700,000.** J. E. Haddow, city engr.

Alta., Edmonton—Public School Bd., H. G. Turner, secy., Edmonton, school, 114 St. and 76 Ave., Strathcona Pl., Dist., Approx. **$300,000;** school, 125 St. and 114 Ave., Approx. **$250,000;** school, 72 St. and 115 Ave., Approx. **$250,000.**

●**B. C., Colquitz**—Province of B. C., Parliament Bldgs., Victoria, plans by H. Whittaker, Parliament Bldgs., Victoria, hospital, nurses home, farm bldgs. **$4,425,000.**

B. C., Cranbrook—District School Bd., Cranbrook high school **$400,000.** CD 5/7/47—ENR 5/15/47.

●**B. C., Mission** — High School Bd., Mission, plans by C. B. K. Van Norman, 540 Seymour St., Vancouver, Junior Senior High School. **$1,000,000.**

●**B. C., Prince George**—Province of British Columbia, Dpt. P. Wks., Victoria, railroad exten., incl. stations, section houses, water towers, etc. **$8,000,000** appropriated.

●**B. C., Quesnel**—British Columbia Power Comn., Victoria, power plant. **$5,000,000.**

●**B. C., Ruskin**—British Columbia Electric Co., 425 Carrall St., Vancouver, power plant addn. **$2,500,000.** T. Ingledow, 425 Carrall St., Vancouver, engr.

B. C. Squamish — Province of British Columbia, Victoria, lumber assembly plant. **$550,000.**

"Big machine"
STAMINA
"Little machine"
MOBILITY

It's the
NELSON K-5

- *"Picks before it shovels."*
- *Two-strand elevator.*
- *Twin Disc clutches.*
- *Four-speed transmission.*
- *Loads two yards a minute.*

Write for details and prices.

TOUGH jobs on the road and tight spots in the yard never stymie a Nelson K-5. Watch this nimble loader as it responds sensitively to operator's touch. Here's *toughness* for the pit or road—plus *agility* for the busy yard. Here is that rare combination of ruggedness and flexibility that you've been looking for.

More, a Nelson K-5 is economical to buy and economical to operate. Use it for quicker, lower cost loading.

NELSON

N. P. NELSON IRON WORKS, INC.
CLIFTON, NEW JERSEY · *Truck Loaders Since 1917*

HIGH AND LOW PRESSURE AIR LINES • HIGH AND LOW PRESSURE WATER LINES • VENTILATING PIPE • CEMENT PUMPING PIPE • DREDGING PIPE • HYDRAULIC SLUICING • DE-WATERING AND DRAINAGE PIPE • SAND AND GRAVEL CONVEYING LINES • IRRIGATION PIPE • WELL-POINT SYSTEMS • COMPOSITE PILING • EXHAUST AND INTAKE PIPING • HIGH AND LOW PRESSURE AIR LINES • HIGH AND LOW PRESSURE WA EMENT PUMPING PIPE ING • DE-WATERING AVEL CONVEYING LIN SYS- G • H INES • HIGH AND LOW P ATING PIPE • CEMENT PU HYDRAULIC SLUICING • DE • SAND AND GRAVEL CO PE • WELL-POINT SYS- TEM AND INTAKE PIPING •

IT'S NAYLOR

LIGHT-WEIGHT PIPE

. . . and it's different from all other light-weight pipe because it's built to give heavy pipe service on applications like those listed. Extra strong. Extra safe. Easy to handle. Easy to assemble. Sizes from 4" to 30" in diameter. All types of fittings, connections and fabrications.

Naylor Pipe

NAYLOR PIPE COMPANY

1248 East 92nd Street, Chicago 19, Illinois

New York Office: 330 Madison Avenue, New York 17, N. Y.

B. C., Squamish — Province of British Columbia, Parliament Bldg., Victoria, plant to be built in conjunction with Pacific Great Eastern Ry., **$500,000.**

●**B. C., Victoria** — Province of British Columbia, Parliament Bldgs., plans by H. Whittaker, Parliament Bldg., office bldg. **$2,000,000.** CD 6/18—ENR 7/7.

Man., Birtle—School Bd., Birtle, plans by E. Fitz Munn, 1202 McArthur Bldg., Winnipeg, school addn. **$250,000.**

Man., St. Boniface—Municipality, housing development, Niverville St. and Braemar Ave. **$300,000.**

N. B., Grand Falls — Bd. School Trustees, Grand Falls, vocational school. **$300,000.** CD 9/30/43—ENR 10/7/43.

N. B., Saint John—City, H. D. Hopkins, Common Clk., childrens aid station. Approx. **$250,000.**

Newfoundland, Gander — Dominion Govt., Hunter Bldg., Ottawa, Ont., housing for Defense personnel, **$250,000.** Central Mortgage & Housing Corp., 588 Gottengen St., Halifax, N. S., engr.

Newfoundland, Grand Falls—Dominion Govt., Hunter Bldg., Ottawa, Ont., housing for Defense personnel, **$350,000.** Central Mortgage & Housing Corp., 588 Gottingen St., Halifax, N. S., engr.

Ont., Barriefield—Dominion Govt., Dpt. National Defense, Ottawa, dwellings for service personnel, **$350,000.** Canadian Commercial Corp., 70 Lyon St., Ottawa, engrs.

Ont., Brockville—Brockville General Hospital Bd. Governors, W. E. Cook, supt., Brockville, plans by Drever & Smith, 81 Brock St., Kingston, 4 story, 44x175 ft., steel, concrete, hospital wing. Approx. **$500,000.**

Ont., Cornwall—Suburban High School Bd., c/o Leo Martin, secy., plans by H. H. Roberts, Westport, collegiate and vocational school. **$250,000.** CD 5/1/47—ENR 5/15/47.

Ont., Lakeview (Postal Dist. Toronto)—School Bd., Lakeview, plans by Page & Steele, 72 St. Clair Ave. W., Toronto, school. **$250,000.**

Ont., Midland — Pub. School Bd., Midland, plans by J. B. Parkin & Assoc., 648 Church St., Toronto, school. **$250,000.**

Ont., New Toronto (Postal Dist. Toronto)—Province of Ontario, Dpt. Health, Toronto, plans by G. N. Williams, Dpt. P. Wks., Toronto, tubercular patients wing to Ontario Hospital, Lake Shore Rd. **$500,000.**

Ont., Ottawa—Carleton Co., A. Roger, reeve, Court House, plans by Walter Sylvester, 46 Elgin St., court house repairs, alterations, Nicholas St. Approx. **$250,000.**

●**Ont., Ottawa**—Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, 400 houses, Gloucester Twp., near Rideau Military Hospital, Hurdmans Bridge. Approx. **$2,500,000.**

Ont., Picton—Dominion Govt., Dpt. National Defense, Ottawa, dwellings for service personnel. **$250,000.** Canadian Commercial Corp., 70 Lyon St., Ottawa, engrs.

Ont., Portage La Prairie — Municipal & Pub. Utility Bd., W. H. Burns, city clk., school to replace Central school. Approx. **$250,000.**

Ont., Seaforth—Hydro Electric Comn. of Ontario, 620 University Ave., Toronto, 110,000 volt transformer station, **$100,000.**

Ont., Strathroy — Hydro Electric Comn. of Ontario, University Ave., Toronto, 110,000 volt transformer station. **$100,000.**

Ont., Streetsville—Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, 50 houses. Approx. **$270,000.**

Ont., Thornbury—High School Bd., T. G. Idle, secy., plans by F. W. Warren, 7 Hughson St. S., Hamilton, 1 story, 250x250 ft., concrete, brick high school, Approx. **$300,000.** CD 11/1/45—ENR 12/27/45.

Ont., Orangeville—Bd. Educ., W. C. Hopkins, secy., Orangeville, plans by J. D. Kyles, 78 Ontario Ave., Hamilton, high school. Approx. **$375,000.** CD 2/12—ENR 3/3.

Que., Beaurepaire—Bd. School Comrs., Pointe Claire, plans by L. E. Marshall, Canada Cement Bldg., Montreal, school. **$300,000.**

Que., Coaticook—Province of Que., Minister of Health, Quebec City, hospital, **$350,000.**

Que., Magdalen Island—Province of Quebec, Ministry of Health, Quebec City, hospital. **$400,000.**

Que., Macamic—Province of Quebec, Dpt. Health, Quebec City, sanitorium addn. **$500,000.**

Que., Pointe aux Trembles (Postal Dist. Montreal)—Protestant Central School Comn., 3460 McTavish St., Montreal, plans by H. R. Wiggs, 1411 Crescent St., Montreal, 3 story, 40x64 ft. and 56x110 ft. school addn., Marien Ave. **$325,000.**

Que., Portneux—Province of Quebec, Ministry of Health, Quebec City, hospital, **$300,000.**

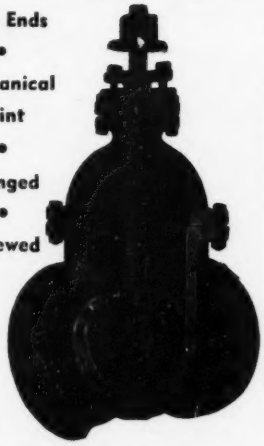
Que., Quebec City—Municipality, reconstructing roof, addn. of another story. **$460,000;** wing to City Hall, facing Chauveau Ave., **$240,000.** Ed Hamel, city engr.

●**Que., Quebec City**—Province of Quebec, Ministry of Health, childrens medical center, **$2,000,000.** CD 1/12/45—ENR 1/18/45.

Que., Quebec City—Province of Quebec (Ministry of Mines) Quebec City, voted research laboratories, mineralogy and metallurgy. **$125,000.**

HYDRANTS & VALVES

Hub Ends
•
Mechanical Joint
•
Flanged
•
Screwed



VALVES: A.W.W.A. type, iron body, bronze mounted with double-disc parallel seat or solid wedge type. Non-rising stem, outside screw and yoke, or with sliding stem and lever. Also furnished hydraulically operated. Square bottom type operates in any position. All rugged and dependable, made of best material with highest quality workmanship.

HYDRANTS: Standard A.W.W.A. type approved by Underwriters and Factory Mutuals. Dry top revolving head, easy to lubricate. High efficiency because barrel diameter not reduced and there are no working parts or obstructions in waterway. SPECIAL TRAFFIC MODEL is designed to yield at ground line under impact, repair being simply renewal of breakable bolts and breakable coupling on stem.

M & H PRODUCTS INCLUDE

FIRE HYDRANTS	SHEAR GATES
GATE VALVES	MUD VALVES
TAPPING VALVES	VALVE BOXES
WALL CASTINGS	FLAP VALVES
SPECIAL CASTINGS	SLUDGE SHOES
TAPPING SLEEVES	FLANGE AND FLARE FITTINGS
CHECK VALVES	FLANGED FITTINGS
FLOOR STANDS	B & S FITTINGS
EXTENSION STEMS	
CUTTING-IN TEES	

Write for Catalog No. 34

M & H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

●**Que., Riviere des Prairies (Postal Dist. Montreal)**—Province of Quebec, Dpt. Health, Quebec City, hospital for mentally deficient children. **$3,000,000.**

Que., St. Laurent (Postal Dist. Montreal)—Protestant Central School Bd., 3460 McTavish St., Montreal, school addn.

Que., Terrebonne—School Comn., L. Gravel, secy., Terrebonne, plans by Deshaies & Depocas, 3405 Cote des Neiges Rd., Montreal, Approx. **$250,000.** Concrete, steel, brick school and residence.

COMMERCIAL BUILDINGS

Ala., Jasper — First Baptist Church, c/o Charles H. McCauley, Jackson Bldg., Birmingham, church. Over **$250,000.**

Ala., Mobile—Catholic Diocese c/o John J. Carey, archt., First National Bank Annex, St. Catherine School and rectory, **$250,000.**

Ala., Montgomery — Jackson Hospital & Clinic, c/o Raymond Sizemore, 16 S. Hyll St., Montgomery, 150 to 175 bed hospital. Over **$250,000.**

Ariz., Tucson—University Catalina Methodist Church, Tucson, plans by Thomas & Wagoner, 117 S. 17 St., Phila., Pa., church and Sunday school. Over **$250,000.**

●**Calif., Broderick**—Sam Maci c/o L. Cedric Macabee, engr., 156 University Ave., Palo Alto, 1,600 to 1,800 residences in Todhunter Tract, near here. **$9,600,000.**

●**Calif., Los Angeles**—Los Angeles Jewish Community Center Assoc., 500 N. Vermont St., community center development east of Fairfield Ave. and Olympic Blvd. **$1,000,000.**

Calif., Oakland — Roman Catholic Archbishop of San Francisco, 1100 Franklin St., San Francisco, St. Cyril's Catholic Church addn., incl. 2 story combination church and parish hall and 2 story rectory. **$300,000.**

Calif., Oakland—Roman Catholic Archbishop of San Francisco, 1100 Franklin St., San Francisco, plans by William S. Schirmer, A1A and William A. Rich, assoc. archt., 1419 Broadway, Oakland, rein.-con. St. Anthony's Parochial School. **$278,000.**

●**Calif., Redwood City**—Oliver Johnson, 81 Lloyden Dr., Atherton, twenty-two 2 story apartments in Atherwood Sub-division. **$2,000,000.**

●**Calif., Salinas**—Salinas Valley Memorial Hospital Dist., Salinas, **$2,000,000** bond election Apr. 12, 6 story, rein.-con. 133 bed 105,592 sq. ft. hospital. Robert Stanton, Carmel, archt.

Calif., San Francisco—University of San Francisco, 582 Market St., plans by Milton T. Pfleuger, 580 Market St., 4 story library. **$350,000.** Huber & Knapeck, 1 Montgomery St., engrs. CD 12/10—ENR 12/23.

●**Calif., San Mateo**—David D. Bohannon Organization, 859 San Mateo St., plans by Angus McSweeney, 415 Mission St., San Francisco, 11 story, Class A rein.-con. apartment. **$1,500,000.** Clarence H. Bazille, 821 Market St., San Francisco, consult. engr.

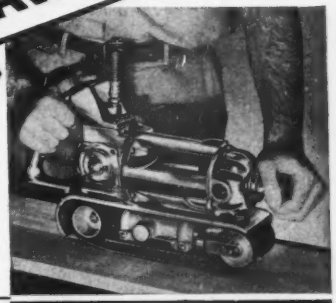
AMERICAN

Portable Sanders

SAVE LABOR!

AMERICAN SANDERPLANE

Belt Sander handles more work and does it many times faster than a hand plane. Sands the material down to a new clean surface. Two models—with and without dust collector bag. Well-balanced, powerful, efficient.



AMERICAN SPEEDY SPINNER

Disc Sander saves time on many jobs . . . small, portable. Semi-flexible disc allows many uses of the Speedy Spinner on curved as well as flat surfaces. Also, complete attachments for drilling, paint mixing, polishing—no extras to buy. Soon pays for itself.

AMERICAN PORTABLE SANDERS

Send Coupon Today!

THE AMERICAN FLOOR SURFACING MACHINE CO.
506 So. St. Clair St.
Toledo 3, Ohio

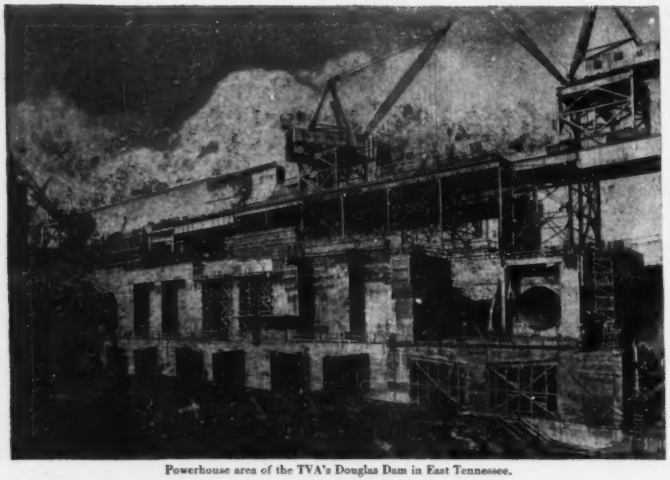
Please send complete descriptive literature and prices on the following—no obligation:

☐ American Belt Sander ☐ American Speedy Spinner

Name.....

Address.....

City.....State.....



Powerhouse area of the TVA's Douglas Dam in East Tennessee.

FIR-TEX

ABSORPTIVE FORM LINER

Produces Smoother, Harder Concrete on

DOUGLAS DAM in Tennessee

FIR-TEX Absorptive Concrete Form Liner is a highly absorptive felted board, with a chemically treated surface which resists bonding. The mechanical vibration of concrete increases the tendency of air and water bubbles to float to the surface and to the face of the mass. When a non-absorptive form liner is employed, these bubbles have no avenue of escape and consequently remain to become voids in the face of the concrete.

The action of the Fir-Tex Liner is like that of a vacuum cleaner. It absorbs all excess air and water adjacent to surface. The removal of bubbles permits the cement to flow into those spaces so that this surface sets solidly into a smooth attractively textured mass of extreme density and resistance to moisture. This structural change in the concrete extends to a depth of about 1¼ inches from the face. Not only has the structure been given architectural beauty, but its weather resistance has been so greatly increased that eminent engineers have referred to its surface as "case hardened."

FIR-TEX INSULATING BOARD CO.

Equitable Building, Portland 4, Oregon

MOTT Diamond Core Drilling Contractors

FOUNDATION TESTING
for
Bridges, Dams, Heavy Structures
PRESSURE TESTING

MFR'S DIAMOND & SHOT CORE DRILLS, GROUT MIXING MACHINES, PACKERS AND GROUT PUMPS

MOTT CORE DRILLING CO.
HUNTINGTON, W. VA.

WELDING CONNECTORS

Sure System Welded Connection Units for welded assembly

Sure *Units* place in position and securely hold together structural parts to be welded.

As used in many welded structures they *eliminate all hole punching*, producing an economical, rigid, safe and quickly erected structural frame.

Write for 58 pg. Manual containing full engineering design information for welded structures.

J. H. WILLIAMS & COMPANY
Buffalo-7, New York
Canadian Representatives
G. D. PETERS CO., Montreal-2, Canada

●**Colo., Colorado Springs**—Owner, c/o Charles D. Strong, engr. and archt., C. A. Johnson Bldg., Denver, rental housing incl. 20 apartments, **$1,500,000.**

Colo., Denver—Loretto Heights College, Albany Hotel, plans by John K. Monroe, consult. engr. and archt., 810 14 St., 1 and 2 story student bldg., known as Machebeuf Hall, incl. dining room, modern kitchen, lounge and snack bar and smaller dining rooms. Over **$250,000.** CD 3/4/48—ENR 3/4/48.

●**Colo., Denver**—University of Denver, Bd. Trustees, University Park Campus, Denver, plans by Charles D. Strong, consult. engr. and archt., 415 C. A. Johnson Bldg., 7 apartments. **$2,000,000.**

Conn., Danbury—Tri-Corner Realty Corp., Joseph Trister, pres., 372 Main St., 2 story, bsmnt., 100x140 ft., brick, steel, concrete, commercial bldg., incl. stores and offices, Main and Elm Sts. **$250,000.**

Conn., Danbury—United Jewish Center, 30 West St., 1 story, bsmnt. brick, stone synagogue, Deer Hill Ave. **$250,000.**

Conn., Deep River—Park Lane Realty Co., Frank Stone, Farmington Ave., 30 acre development, incl. homes, Crystal Beach, Oyster River Splits Property. **$250,000.**

Conn., Hamden—Spring Glen Congregational Church, George A. Riggan, pastor, 19 Spring Glen Terrace, plans by Arland Dirlam, 673 Boyleston St., Boston, Mass., 1 story, bsmnt., brick, stone Church, Whitney Ave. and Glen Parkway. **$300,000.**

Conn., Hartford—Paton Price and S. Capuano, 19 Dean St., Hartford, and Morgan James, Canton, plans by Frank Loyd Wright, c/o owners, brick, stone theater. Over **$250,000.**

Conn., Putnam—Southern New England Telephone Co., 227 Church St., New Haven, plans by Carl Malmfeld & Assoc., 36 Pearl St., Hartford, brick, steel, telephone exchange bldg., dial equip., office, etc., **$250,000.**

Conn., Thompsonville—St. Patrick's Roman Catholic Parish, Rev. W. P. Kilcoyne, pastor, plans by Wendell T. Phillips, 98 Congress St., Millsbury, Mass., 1 story, bsmnt. church, Pearl and High Sts. **$400,000.**

Fla., Miami—R. & M. Corp., c/o Walter R. Shiner, 1115 Cortez St., Coral Gables, office bldg. **$250,000.**

Fla., Pensacola—Baptist Memorial Hospital, c/o Charles H. McCauley, archt., Jackson Bldg., Birmingham, Ala., hospital. Over **$500,000.**

Fla., Tampa—Sisters of St. Joseph, 7 Ave. and Morgan St., plans by Wm. B. Harvard & John D. Dodd, Alhambra Arcade, St. Petersburg, 100-bed St. Joseph Hospital addn. **$500,000.**

Ga., Atlanta—Amco Investment Co., c/o Arthur Neal Robinson, archt., Henry Grady Bldg., 5 story office bldg. addn., alterations. Over **$250,000.**

Ga., Atlanta—Lakemoore Apartments, Inc., c/o A. T. Bradbury, archt., 60 5 St. N. E., apartment development. Over **$250,000.**

Ga., Atlanta—Lutheran Church of The Redeemer, 732 Peachtree St., preliminary plans by Thomas & Wagoner, 117 S. 17 St., Phila., Pa., church, **$350,000.** CD 2/3—ENR 2/4.

Ga., Atlanta—Plantation Pipe Line Co., Healey Bldg., plans by Moscowitz, Wilner & Millkey, 1000 Peachtree St. N. E., office. **$400,000.**

Ga., Augusta — Academy-Junior College, Augusta, library. **$250,000.**

Ga., Columbus—Victory Apartments, Inc., c/o James C. Wise, 305 Techwood Dr. N. W., Atlanta, apartment development. Over **$500,000.**

Ga., Macon—Bibb Mfg. Co., c/o Ellamae Ellis League, Grand Bldg., office. **$300,000.**

Ga., Thomson—McDuffie Hospital Assn., c/o Scroggs & Ewings, archts., S.F.C. Bldg., Augusta, hospital, Over **$250,000.**

Ill., Chicago—Congregation Beth Sholom, 1233 Pratt Blvd., plans by B. A. Comm, 1607 Howard St., 3 Story, 50x130 ft., brick synagogue.

●**Ill., Chicago**—Greyhound Corp., 141 W. Jackson Blvd., plans by Skidmore, Owings & Merrill, 100 W. Monroe St., 2 story, bsmnt. Greyhound Terminal, Clark and Randolph Sts., **$7,000,000;** 20 story office on top of bus terminal, **$5,000,000.**

Ill., Chicago—Owner, c/o Frank Lapasso, archt., 8 S. Dearborn St., 80 suite apartment. **$900,000.**

Ill., Evergreen Park — Peace Memorial Church, 1460 W. 78 St., Chicago, plans by Albert F. Heino & Assoc., 7919 S. Ashland Ave., Chicago, hospital, 102 St. Sawyer Ave. **$350,000.**

Ill., LaGrange (P. O. LaGrange)—Nazareth Academy, 200 N. Brainerd St., plans by Thos. J. Higgins & Assoc., 228 N. LaSalle St., Chicago, high school. **$600,000.** CD 1/30/46—ENR 2/14/46.

●**Ill., Niles**—St. Hedwig School & Orphan Home, 7135 N. Harlem St., plans by Leo Sterelka, 1103 Westgate Ave., Oak Park, 4 story brick, steel home for aged. **$2,000,000.**

IT COSTS LESS TO OPERATE A BARCO

LESS for investment
LESS for fuel
LESS for maintenance

For heavy pavement breaking, the Barco Model H-65 is recommended. It is the fastest, most powerful gasoline hammer ever developed.

FOR all-around pavement breaking and demolition work, no other hammer does a more economical job than Barco. This portable, versatile slugger delivers more work, with lower operating and maintenance charges, permits work on projects that otherwise would not support the cost of breaking equipment. Drilling attachments are available. Many widely separated jobs can be carried on at the same time without heavy capital investment or costly transportation charges. In power, speed and portability, Barco has no superior. Write Barco Manufacturing Company, 1814 Winnemac Avenue, Chicago 40, Illinois. In Canada: The Holden Co., Ltd., Montreal, Canada.

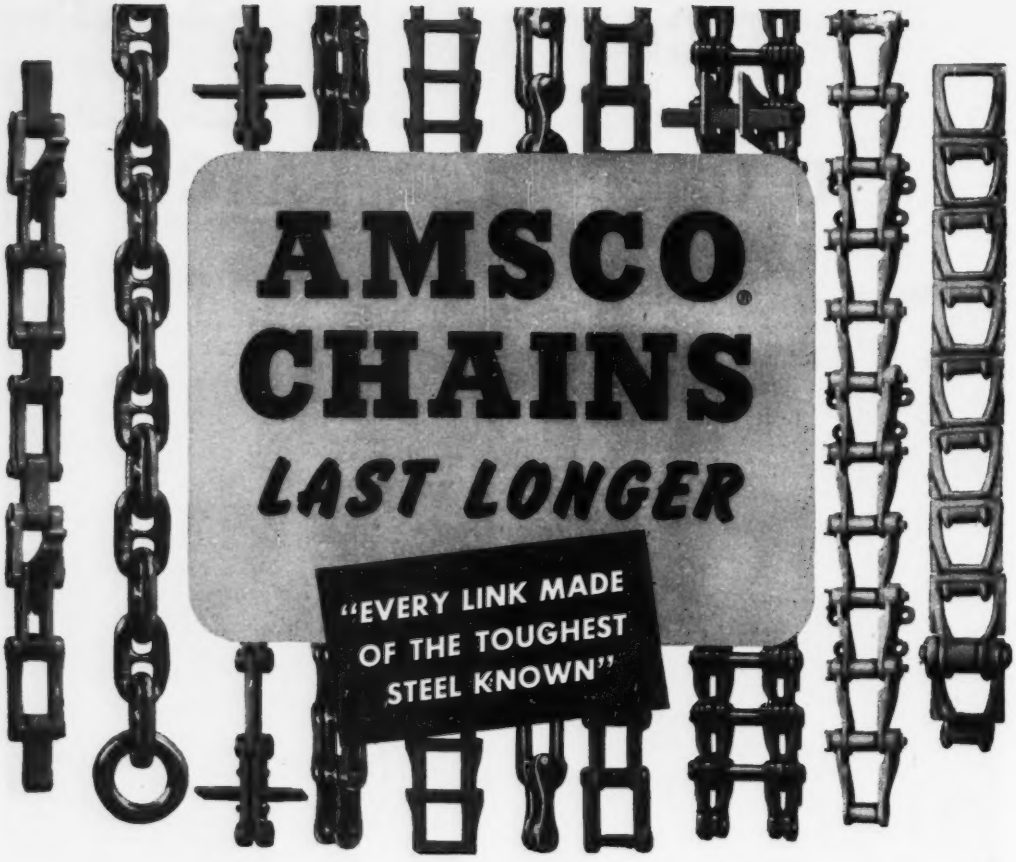
The Barco Model J-2, is ideal for hard ground or for digging in rock which can be broken out without blasting.

BARCO

PORTABLE GASOLINE HAMMERS

BREAKING • DRILLING
DRIVING • TAMPING

FREE ENTERPRISE—THE CORNERSTONE OF AMERICAN PROSPERITY



Replacing ordinary elevating and conveying chain is a constant drain on profits . . . a constant source of production tie-ups and delays. Stop all these worries today by installing Amsco manganese steel chain in the really tough services. It often repays its own cost many times over by its tough resistance to breakage stresses and its outstanding wear resistance.

Here's the kind of service users report: 25 months with little wear versus 8 months; 27 months with 2 years' service left where ordinary chain lasted only 3 months.

With a test-bar tensile strength of 125,000 lbs. (average test), high ductility, and a surface that work hardens to as high as 550 Brinell, Amsco manganese steel chain withstands severest stresses and grinding abrasion . . . it can be used without lubrication in dust-laden atmospheres.

Added to this is the Amsco engineering design experience that will help to meet your problem with the one best chain for trouble-free service. Write for Bulletin 742-CN . . . and let us quote on your requirements.

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS, ILL.

Foundries at Chicago Heights, Ill., New Castle, Del., Denver, Colo., Oakland, Calif., Los Angeles, Calif., St. Louis, Mo.
Offices in principal cities. In Canada: Joliette Steel Limited, Joliette, Que.

Ill., Quincy—Vermont St. Methodist Church, 8 and Vermont Sts., plans by Hugo Haeuser, 2051 W. Wisconsin St., Milwaukee, Wis., church, 818 Vermont St., $350,000. CD 4/28/47—ENR 5/8/47.

Ind., Fort Wayne—Peoples Trust & Savings Bank, 913 S. Calhun St., Fort Wayne, plans by A. M. Strauss, 415 Cal-Wayne Bldg., Fort Wayne, 1 story, bsmnt., 56x91 ft. stone, brick, rein.-con. chapel, Blessed Sacrament, Lewis and Clinton Sts. $260,000.

Ind., Indianapolis—Equitable Life Assurance Society, 393 7 Ave., New York, N. Y., preliminary plans by Skidmore, Owings & Merrill, 100 N. Monroe St., Chicago, Ill. and Robert Frost Daggett, assoc. archt., 250 E. Fall Creek Blvd., North Dr., Indianapolis, 3 or 4 story masonry, department store, Monument Circle, Market to Meridan Sts., $500,000. J. C. Penney Co., 330 W. 34 St., New York, N. Y., lessee. CD 10/7—ENR 10/21.

Ind., Terre Haute—Ohio Oil Co., S. Main and Hardin Sts., Findlay, O., plans by Wilbur Watson Assoc., 4614 Prospect Ave., Cleveland, Zone 3, O., 2 story, bsmnt., 48x120 ft., wing, brick, rein.-con. office, Cherry St., between 6 and 7 Sts. $300,000.

Ia., Cherokee—Sioux Valley Hospital, Cherokee, plans by Wm. Huettler, Insurance Exchange, Sioux City, hospital. $330,000.

Ia., Corning—Rosary Hospital, Corning, plans by Wetherell & Harrison, Shops Bldg., Des Moines, hospital, $600,000.

Ia., Des Moines—Iowa Lutheran Hospital, 712 Parnell St., plans by Wetherell & Harrison, Shops Bldg., Des Moines, hospital addn. $750,000. CD 7/9/47—ENR 7/31/47.

Kan., Larned—Dominican Sisters, Larned, plans by Cayton & Murray, Abilene, hospital. $400,000. CD 10/16/47—ENR 10/23/47.

Ky., Lexington—Lexington Fayette Co. Y. M. C. A., Lexington, plans by Brock & Johnson, 144 Barr St., YMCA bldg., $500,000. CD 4/13—ENR 4/29.

Kan., Olathe—Olathe Hospital Foundation, c/o City, City Hall, hospital. $275,000.

La., Jennings—Jennings Hotel, c/o Barron & Heinberg, archts., Guaranty Bank Bldg., Alexandria, hotel. Over $250,000.

La., Lake Charles—W. L. Paternostra, 225 Broad St., plans by Gabriel & Reames, Roumain Bldg., brick, steel theatre. $350,000.

La., New Orleans—St. Alphonsus Church, 2030 Constance St., plans by Norman & Nolan & Nolan, Queen Crescent Bldg., 2 story, 80x160 ft., concrete, brick parochial school.

Md., Baltimore—Owner, c/o David Harrison, archt., 421 St. Paul Pl., preliminary plans shopping center, Dolfield Blvd. and Cold Spring Lane, $750,000.

Mass., Arlington—St. James Parish, Rev. Maurice O'Connor, D.D., pastor, 15 Appleton Pl., plans by Wm. B. Colleary, 117 Revere St., Boston, parochial school, Acton St. Over $250,000.

Mass., Boston—Boston Museum of Science, 189 Chestnut St., plans by Ames Child & Graves, 50 Beacon St., wing to museum, Charles St., near Leachmere Bridge. $350,000. Robert M. Becker, 50 Beacon St., structural engr.

Mass., Boston—Massachusetts Eye & Ear Infirmary, 243 Charles St., plans by Coolidge, Shepley, Bulfinch & Abbott, 1 Court St., hospital addns., alterations. $500,000.

● **Mass., Boston**—Northeastern University, 360 Huntington Ave., Boston, plans by Coolidge, Shepley, Bulfinch & Abbott, 1 Court St., library, Huntington Ave. $1,500,000.

Mass., Brighton—Sutherland Realty Co., Inc., 217 Kent St., Brookline, plans by Saul E. Moffie, 1318 Beacon St., Brookline, 3 story, bsmnt., brick, cast stone apartment, Sutherland and Strathmore Rds. $250,000. Edward H. Heenan, 18 Brattle St., Cambridge, consult. engr.

Mass., Danvers—St. Johns Preparatory School, Spring St., plans by Alfred Shaw, 208 S. LaSalle St., Chicago, Ill., gymnasium, $350,000. CD 2/7/45—ENR 3/22/45.

Mass., Lenox—Our Lady of Mercy Preparatory School, Very Rev. George K. McGee, Society of Fathers of Mercy, Pittsfield, preparatory school. $250,000.

Mass., Springfield—Morris Bennett, 62 Osgood St., plans by E. P. Dorgan, 833 Chestnut St., 3 story, bsmnt., brick apartment, School St.; 2 story bsmnt., brick apartment, Mill St. Over $250,000.

Mass., Waltham—Brandeis University, G. Alpert, chn. Bd. Trustees, 10 State St., Boston, plans by Archie Riskin, 262 Washington St., mens and womens dormitories alterations, addns. $300,000. Mark Linenthal, 16 Lincoln St., Boston, engr.

Mass., Worcester—Young Mens Christian Assn., 766 Main St., plans by Johnson & Rustigian, 390 Main St., 2 story, bsmnt., Greendale Sect. branch of Y.M.C.A., $250,000.

Mich., Grand Rapids—Congregation Emanuel, c/o Eric Mendelsohn, archt., 627 Commercial St., San Francisco, Calif., temple, community center. $300,000.

● **Mich., Saginaw**—St. Lukes Hospital, Saginaw, plans by Schmidt, Garden & Erickson, 104 S. Michigan Ave., Chicago, Ill., hospital, $1,800,000. CD 3/12/47—ENR 4/3/47, under Public Bldgs.

"VIC" TELLS HOW

YOU CAN LAY PIPE FASTER AND CUT LABOR COSTS, TOO WITH VICTAULIC COUPLINGS!

LESS TIME PER JOB!... just tighten the two bolts on Victaulic Couplings and you button up a piping system that's leak-tight and slip-proof ... one that's flexible ... and one that automatically allows for contraction or expansion at each and every coupling.

LOWER LABOR COSTS!... no specially trained or skilled labor is needed when you connect your piping system with quick-and-easy Victaulic Couplings... and the only tool required is a standard T-wrench!

★ TO INCREASE the output of your pipeline... and lower pumping costs at the same time... use Full-Flow Victaulic Elbows, Tees, and other Fittings!

★ TO GROOVE pipe ends twice as fast ... with half the effort of ordinary pipe threaders ... use our new "Vic Groover"!

WRITE TODAY for these two catalogs and see how you can save time, material, money: Victaulic Catalog and Engineering Manual No. 44 ..."Vic Groover" Catalog No. VG-47.

Sizes—¾" through 60"

FOR FULL ECONOMY...MAKE YOUR PIPING SYSTEM ALL VICTAULIC!

SELF-ALIGNING PIPE COUPLINGS
VICTAULIC
EFFICIENT FULL-FLOW FITTINGS

VICTAULIC COMPANY OF AMERICA
30 ROCKEFELLER PLAZA, N. Y. 20, N. Y.
Victaulic Inc., 727 W. 7th St., Los Angeles 14, Cal.
Victaulic Co. of Can. Ltd. 200 Bay St., Toronto 1

For Export outside U. S. and Canada: PIPECO Couplings and Fittings - Pipe Couplings, Inc., 30 Rockefeller Plaza, New York 20, N. Y.

Copyright 1949, by Victaulic Co. of America

Minn., St. Paul—St. Joseph Hospital, 69 W. Exchange St., plans by Margulo & Quick, 1004 Marquette Ave., Minneapolis, boiler house, equip. $250,000. CD 1/3/47—ENR 1/12/47.

Miss., Greenville — St. Joseph Catholic School, c/o Rev. M. Maloney, Greenville, plans by Wm. R. Burk, Pan American Bldg., New Orleans, La., parochial school. Over $250,000.

Miss., Jackson—Owner, c/o E. L. Malvaney, archt., Millsaps Bldg., shopping center, at intersection Terry and Raymond Rds. Over $250,000.

Mo., Point Lookout—School of the Ozarks, R. M. Good, pres., Point Lookout, boys dormitory, chapel and hospital. $500,000. CD 1/26—ENR 2/10 and CD 1/31. ENR 2/10, under Mo., Hollister.

N. J., Millville—Millville Y.M.C.A., Millville, plans by Walter Custer, Bridgeton, bldg. $250,000.

N. Y., Astoria—Brecher-Wahl Realty Corp., c/o Samuel Paul & Assoc., 163-18 Jamaica Ave., Jamaica, 6 story, apartment, 31 Ave. and Crescent St. $800,000.

N. Y., Bayside—Jeffrey Garden Apartments, Inc., c/o Samuel Paul Assoc., archts., 163-18 Jamaica Ave., Jamaica, 3 story garden apartments, 47 Ave. and 215 Pl.; 215 Pl., near 47 Ave., westside; 215 Pl. near 47 Ave. eastside 47 Ave. and 215 Pl. $755,000.

N. Y., Brooklyn—Congregation B'nai Yechiel Ashkenazi Anshe Sfard, Inc., 320 Brighton Beach Ave., Zone 24, plans by Joseph Saravis, c/o owner, 4 story school, 3096-3104 Brighton 4th St. $250,000.

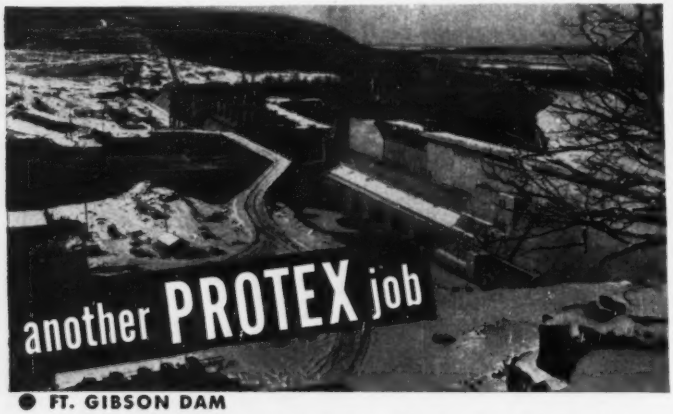
●**N. Y., Brooklyn**—Kingsway Gardens, Inc., 14 Washington Pl., New York, plans by Ingram S. Carner, 1559 E. 28 St., three 6 story apartments, 1 at 2807-21 Kings Hy. $850,000; 1 at 2706-21 Kings Hy., $1,000,000; and other at 2607-15 Avenue O, $800,000.

●**N. J., Fairview (Camden P. O.)**—Markheim-Chalmers & Ludington, Inc., 540 Cooper St., Camden, apartment development, Morgan and 8 Sts. $2,000,000.

N. Y., Flushing—Park Flushing Corp., c/o S. Paul & Assoc., archts., 163-18 Jamaica Ave., Jamaica, apartment, Saull St. and Cherry Ave., and Cherry Ave. near Saull St., $595,000.

N. Y., Queens Village—R. P. K. Corp., c/o S. Paul & Assoc., archts., 163-19 Jamaica Ave., Jamaica, 3 story apartment, 221 Pl. 90 Ave.; 90 and Braddock Aves.; 90 Ave. and Barkell Pl.; Winchester Blvd. and Barkell Pl. $690,000.

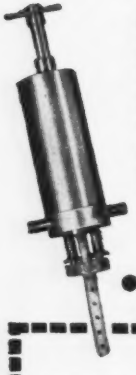
N. Y., Rego Park—Eldee Garden Apartments, Inc., c/o Schulman & Soloway, archts., 4 Court Square, Brooklyn, Zone 2, apartment, Woodhaven Blvd. between 62 Rd. and 62 Ave. $400,000.



● **FT. GIBSON DAM**

More and more concrete is being placed using *Protex* Air Entraining Solution . . . on jobs where it is desired to have economical placement of *good, durable* concrete.

AEA Pays for Itself Protex Air Entraining Agent more than pays for itself because it reduces the amount of fine, expensive sand required, gives increased yield . . . and speeds up the job through improved workability and placability of concrete, saving both time and labor.



Produces Good, Durable Concrete Concrete placed with Protex Air Entraining Agent gives resistance to freezing and thawing, cracking and spalling; reduces bleeding of water from mix; keeps segregation of aggregate to a minimum; increases slump for any given water-cement ratio; decreases sag on slopes; allows smoother, faster finishing; increases resistance to sulphate corrosion.

Uniform, Accurate Control with Protex Protex is a completely saponified air-entraining solution that *cannot settle out* under any condition . . . and will not gum up the dispenser. Thus, Protex is always the same and you are assured of uniform, accurate control. Approved and used by governmental agencies

Protex . . fully approved under ASTM C-175-48T and Federal spec. SS-C-192

● **LOW COST PROTEX DISPENSER...*AUTOMATICALLY* DISPENSES PREDETERMINED AMOUNT OF AEA.**

FREE BOOK ON AIR ENTRAINMENT

AUTOLENE LUBRICANTS CO.
Industrial & Research Division, Denver 9, Colorado

Please send me your book, "Facts on Modern Placement of Concrete Through Air Entrainment."

*Name*_____

*Address*_____

_____

When you need specific information on materials, equipment or services, reach for your Sweet's File, Engineering (the big blue file). It contains 330 manufacturers' catalogs full of useful information on thousands of products . . . from absorbers—gas, to zinc galvanizing. Cross indexing speeds finding.

If Sweet's File, Engineering, is not available in your office, make request immediately for application form. Files are distributed FREE to qualified organizations and individuals.

Sweet's

CATALOG SERVICE

for easier, faster selection of products

119 W. 40th ST., NEW YORK 18, N. Y.

N. C., Charlotte—Church of the Holy Comforter, T. C. Heywood, chn. Bldg. Com., Rev. Iveson B. Nolan, rector, 1506 S. Blvd., plans by Eibert M. Conover, consult. archt., Phila., Pa., church, rectory, parish house, on 4 acre site, 2600 Avondale Ave. **$500,000.**

●**N. C., Charlotte**—Winston A. Thompson, 141 Brevard Court, Charlotte, Jno. Stewter, Jr., Winston-Salem and J. B. Thomas, 138 Brevard Court, Charlotte, plans by Lyles, Bissett, Carlisle & Wolff, Columbia, 241 units on 28 acre site on east side of Wakefield Dr. **$3,000,000.**

N. C., Fayetteville—E. H. Blackburn, Fayetteville, residential development. Over **$300,000.**

●**N. C., Greensboro**—W. H. Weaver, Greensboro, 176 unit housing (Lindley Park Manor), in Lindley Park area. Over **$1,300,000.** CD 8/15/47—ENR 8/28/47.

N. C., Lumberton—Southern Bell Telephone & Telegraph Co., L. B. Eisenhart, mgr., Lumberton, 2 story, rein.-con., brick bldg. etc., East Fifth and Cedar Sts. **$900,000.**

N. C., Raleigh—Raleigh Apartments, Inc., c/o Alan S. O'Neal, 1020 W. Peace St., housing, six 2 story bldgs., Cameron St. and Smallwood Dr. **$400,000.**

●**N. C., Winston-Salem**—Wake Forest College, c/o Dr. C. C. Warren, chn. Bd. Trustees, 318 N. Tryon St., Charlotte, plans by Jens F. Larson, 331 Madison Ave., New York, N. Y., chapel and auditorium. Over **$1,000,000.** CD 10/21/46—ENR 10/31/46.

Okla., Oklahoma City—Catholic Church, c/o Bishop E. J. McGuinness, c/o C. L. Monnot, archt., 1915 N. Indiana St., home for elderly Catholic people, N. W. 19 and Portland Sts. **$100,000.**

●**Okla., Oklahoma City**—Lyon Development Co., First Natl. Bldg., plans by Albon W. Davis, Apco Towers, 185 houses development, N. W. 23 and Roff Sts. **$2,000,000.**

Okla., Oklahoma City—Sohio Petroleum Co., 1st Natl. Bank Bldg., plans by Coston & Frankfurt, Apco Tower Bldg., remodeling 12th, 13th and 14th floors of Skirvin Tower Hotel as offices. **$350,000.** CD 11/17—ENR 12/16.

Okla., Oklahoma City—Tradesmens National Bank, Tradesmen Bank Bldg., project abandoned, Tradesmen National Bank Bldg. addns. **$250,000.** Coston & Frankfurt, Apco Tower, archts. CD 6/9/48—ENR 6/17/48.

Okla., Tulsa—Holly Stores, Inc., 222 S. Main St., plans by John Cushing, Marshall Bldg., remodeling Holly Stores, 224 S. Main St. **$185,000.**

Okla., Tulsa—Jacobson Bros., 3649 Terwilleger Blvd., 135 unit ranch type houses, in Ranch Acres. **$250,000.** Mansur & Steele, 1211 S. Frisco St., consult. engrs.

Okla., Tulsa—Otis E. Nidiffer, 1930 S. Knoxville St., plans by George W. King, Tuloma Bldg., 25 single family houses and business sect., 51 and Peoria Sts. **$300,000.**

Ore., Bend—Central Oregon Hospitals Foundation, Bend, plans by J. W. Maloney, Central Bldg., Seattle, Zone 4, 100 bed St. Charles Hospital addn. **$500,000.** CD 11/11/46—ENR 11/21/46.

Pa., Norristown—The Bell Telephone Co. of Penna., 1401 Arch St., Phila., plans by Zantzinger & Borie, 1521 Locust St., Phila., central exchange bldg. **$460,000.** Frank N. Kneas, 504 Woodland Terrace, Phila., consult. engr.

●**Pa., Pittsburgh**—University of Pittsburgh Medical Center, Forbes St., plans by Ingham, Boyd & Pratt, 1211 Empire Bldg., nurses home and training school. **$4,050,000.** CD 1/22/48—ENR 2/19/48.

Pa., Pottstown—The Hill School, Pottstown, plans by W. G. Eccles Co., 223 E. Washington St., New Castle, dormitory. **$300,000.**

Pa., Sewickley—Sewickley Academy, Sewickley, plans by Ingham, Boyd & Pratt, 507 Liberty Ave., Pittsburgh, 3 story, bsmnt., brick private school addn. **$250,000.**

R. I., Johnston—Our Lady of Grace Church, Rev. Dominic Russillo, Johnston, plans by Samuel Morino, 108 Clarendon St., Providence, 1 story, bsmnt., brick, stone church, Waterman Rd. **$250,000.**

R. I., Warwick — St. Mark's Episcopal Church, A. R. Parshley, Arch Deacon, Episcopal Diocese, 101 Benefit St., Providence, plans by Irven F. Goodman, 934 Industrial Trust Bldg., Providence, 1 story, bsmnt., cinder block, stone church-parish house, etc., West Shore Rd. **$250,000.**

●**S. C., Isle of Palms**—The Beach Co., J. C. Long, pres., 88 Broad St., Charleston, 1,000 residential units. **$10,000,000.** CD 11/6/44—ENR 11/16/44.

Tenn., Jackson—Harold Simpson, Jackson, plans by W. C. Harris, Jackson, shopping center. **$250,000-$300,000.**

Tex., Austin — Texas National Hotel Assn., c/o W. L. Moody, Jr., 2028 Market St., Galveston, plans by Atlee B. & Robert M. Ayres, Transit Tower, San Antonio, 3 story, masonry, concrete, steel Austin Hotel addn. **$300,000.**

Tex., Beaumont—First Baptist Church Congregation, 848 Broadway, plans by W. B. Livesay, 325 San Jacinto Life Bldg., 3 story, 92x135 ft., brick concrete educational bldg., concrete fdn., air-conditioning. **$300,000.**

Tex., Bryan—Apartments, Inc., c/o J. C. Culpepper, 1505 S. College Ave., plans by Norton & Mayfield, 1505 S. College Ave., 58 masonry apartment units. **$464,000.**

Malsbary makes a cleaner for every purpose. Write for catalogs and full information on how best to handle your cleaning problems.

DEMAND PERFORMANCE!

The new Malsbary 110 Cleaner is out-performing, **out-classing** conventional "steam" cleaners... and meets the demand for a rugged, light-duty cleaner. And no wonder:

★ **SIMPLE, FOOLPROOF DESIGN** that gives years of service with minimum maintenance.

★ **EASY OPERATION** with only **3** controls, yet full performance and 4 different cleaning actions.

The Malsbary 110 Cleaner is a **new type** cleaner... small, compact, rugged and portable...with **one** dual purpose diaphragm pump, semi-automatic oil burner, flash-type coil heat and special solution mixing compartment.

Send Inquiries to Department B

SINCE 1921

MALSBARY MANUFACTURING CO.

845 92nd AVENUE · OAKLAND 3, CALIFORNIA

GET TWICE THE LIFE AND SAVE WITH

"GUNITE"

Investigate its possibilities. Pneumatically Applied to Any Surface Any Thickness. Bunker Stacks, Tunnels, Reservoirs, Sewers, Walls, Tanks.

Gunite specialists since 1915.

Engineering Data—Estimates

SHOTCRETE CONSTRUCTION CO.

102 Locust St. Garden City, N. Y.

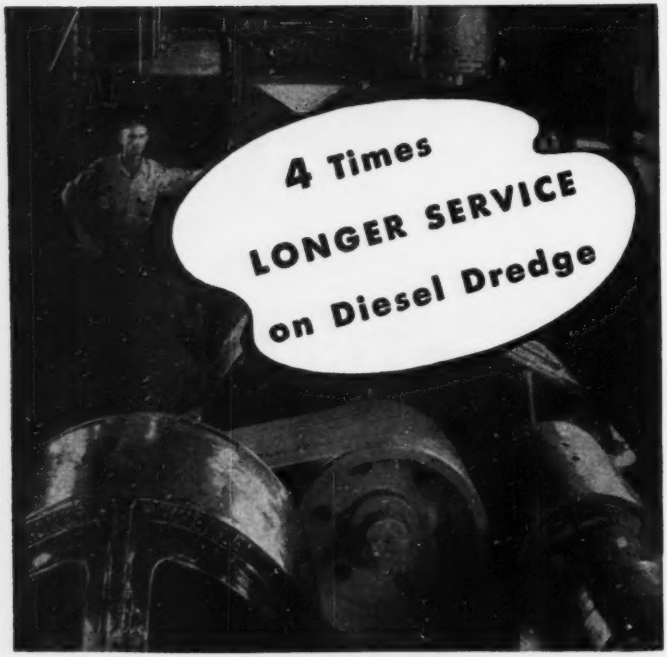
Garden City 7-5451

DRILLING ANYWHERE

We look into the earth

PENNSYLVANIA DRILLING COMPANY

PITTSBURGH, PA.



with *Condor* Whipcord V-Belts

A team of 12 Condor Whipcord V-Belts lasted 4 times longer than previous V-belt constructions on the dredge shown above. They operate from a 500 HP Diesel Engine to an 85 kw, d-c. generator which in turn operates a 75 HP motor. The principal reason for the outstanding record is Manhattan's method of manufacture. The stout, endless-wound Whipcord Strength Member engineered by Manhattan is pre-stretched.

This reduces on-the-job stretch to a minimum, so that all Condor V-Belts pull together as *one*. Heat-dissipating Flexlastics cushion the shock of heavy engine acceleration and maintain firm, wear-resistant contact in the sheave grooves. The Flexlastics cover is weather-resistant. Oil-Proof and Non-Spark constructions are available on specification.

Try Condor Whipcord V-Belts on your next installation and save on the longer service they give.

("Flexlastics" is exclusive with Manhattan)

RAYBESTOS-MANHATTAN INC.

Keep Ahead with Manhattan

MANHATTAN RUBBER DIVISION PASSAIC, NEW JERSEY

Tex., College Station—Apartments, Inc., c/o Norton & Mayfield, archts., 1505 S. College Ave., Bryan, 5 masonry apartments. **$250,000.**

●**Tex., Corpus Christi**—Corpus Christi, Inc., c/o Lee Aikin, Airport Rd., 200 housing units, on 44 acre tract between Almeda and Staples St. **$1,000,000.**

●**Tex., Dallas**—Herman Loupot, c/o Westmoreland Village, 202 N. Burnet St., plans by Leinbach Bros., 600½ E. Jefferson St., shopping center, 10 acre plot in Oak Cliff., **$800,000;** commercial units on Fort Worth Hy., **$350,000.** Koch & Fowler, Gr. Natl. Life Bldg., consult. engrs. CD 2/21.

●**Tex., Dallas**—Moody & Tips, 701 Forest Ave. Rd., 2,000 masonry home subdivision development, 400 acre site bounded by Illinois and Morrell Sts. and M. K. T. Ry. line. Cedar Crest Golf Club area. **$20,000,000.**

●**Tex., Fort Worth**—Beverly Hills Development Co., c/o P. D. Henry, 209 N. 8 St., plans by Herman G. Cox, 501 N. P. Anderson Bldg., community shopping center in Beverly Hills Addn. off Jacksboro Hy. **$2,000,000.**

Tex., Houston—M. DeGeorge Estate, c/o Ambassador Hotel, 919 Fannin St., plans by Garrison King, 2130 Harold St., 3 story hotel, **$300,000.** CD 1/27—ENR 2/10.

Tex., Houston—H. K. Ferguson Co., M & M Bldg., 3 or more stories, masonry commercial bldg. **$600,000.**

Tex., Houston—H. R. LeMay, 4818 Main St., 50 dwellings. **$425,000.**

Tex., Houston—R. A. McWilliams & Assoc., M. Esperson Bldg., 45 dwellings, Oak Forest sub-division. **$303,750.**

●**Tex., Houston**—Oak Forest Corp., c/o Frank W. Sharp & Assoc., 2202 Rosslyn St., 455 dwellings, in new sect. bordering Oak Forest proper. **$2,750,000.**

●**Tex., Houston**—P. C. Stewart, 5308 Carrolton St., plans by Still, Wildman & Crockett, 3509 Almeda Rd., 400 dwellings, 14 blocks between Askew and Golfcrest Blvd. along Gulf Freeway, Freeway addn., **$3,500,000.**

Tex., Hunt—Synod of Texas of the Presbyterian Church, 909 McKinney St., Houston, synod project, **$250,000.**

Tex., Irving—Lloyd Blalock, Belton St., Dallas, 65 dwellings, Northern Hills sub-division. **$375,000.**

Tex., Laredo — Southwestern Bell Telephone Co., c/o G. Underwood, Laredo, masonry, concrete, steel telephone bldg. **$300,000.**

Tex., Longview—First Baptist Church, Longview, church. **$700,000.**

Tex., Longview—First Methodist Church, Longview, auditorium. **$300,000.**

Tex., Port Lavaca—Calhoun Development Co., Port Lavaca, 60 unit housing on 104 acre site. **$375,000.**

Tex., San Antonio—Riverside Park Baptist Church, 3500 S. Presa St., plans by Will N. Noonan, 720 Travis Bldg., 2 story, 115x759 ft., hollow tile, brick, concrete church, **$400,000.** CD 4/10/46—ENR 5/2/46.

Tex., San Antonio—Sisters of Charity of Incarnate Word, 4107 Broadway, plans by Julian & White, 2901 Transit Tower, 2 story, masonry, concrete high school, concrete fdn., **$275,000;** 2 and 3 story dormitory, **$275,000;** masonry gym.-auditorium, **$250,000;** classroom unit with facilities chapel and convent, **$250,000,** all foregoing Hildebrand Ave. at Mt. Erin, north of Alamo Stadium.

Tex., San Antonio—Thurman Barrett & Assoc., 6109 S. Flores St., addnl. housing, on Southside. **$300,000.**

Tex., Waco—H. E. Butt Grocery Co., Robstown Rd., Corpus Christi, plans by V. D. Phelps, 4601 Montrose Blvd., Houston, grocery **$300,000.** CD 2/21.

Tex., Wichita Falls — Morningside Park Estates, Inc., c/o Paul Thiem, Jr., Wichita Falls, brick veneer dwellings and apartments, concrete slab 5lns. **$375,000.**

Va., South Boston — Halifax Community Hospital, c/o Stanhope S. Johnson, archt., Allied Arts Bldg., Lynchburg, 60 bed hospital. Over **$500,000.**

Wash., Pasco—Our Lady of Lourdes Hospital, Pasco, plans by J. W. Maloney, Central Bldg., Seattle, Zone 4, 47x206 ft., rein.-con. hospital addn. **$670,820.** CD 2/16.

●**Wash., Seattle**—F. R. McAbee & V. O. Stringfellow, 921 Elliott Ave. W. plans by Thomas Grainger & Thomas, Arcade Bldg., Seattle, Zone 1, 2 and 3 story apartment, Seaview Apartments, **$1,000,000.**

Wash., Seattle—Park Terrace, Inc., c/o R. O. Hagen, 10000 Lake Shore Blvd., plans by J. Rogers, 1056 Roy St., 3½ story, 125x206 ft. masonry apartment. **$500,000.**

Wash., Spokane—Pacific Telephone & Telegraph Co., Telephone Bldg., Seattle, Zone 4, plans by Jones & Bindon, Hoge Bldg., Seattle, Zone 4, 3 story bsmnt., telephone bldg. addn. **$670,000.** CD 1/21—ENR 2/10.

Wash., Vancouver—Seattle First National Bank, 2 and Cherry Sts., Seattle, Zone 4, plans by McClelland & Osterman, Skinner Bldg., Seattle, Zone 1, 100x100 ft. masonry branch bank. **$350,000.** CD 7/9—ENR 7/22.

W. Va., Whiteville—Raleigh-Boone Hospital Assn., c/o Vacellio & Kreps, archts., Odd Fellows Bldg., Charleston, 100 bed hospital. Over **$750,000.**

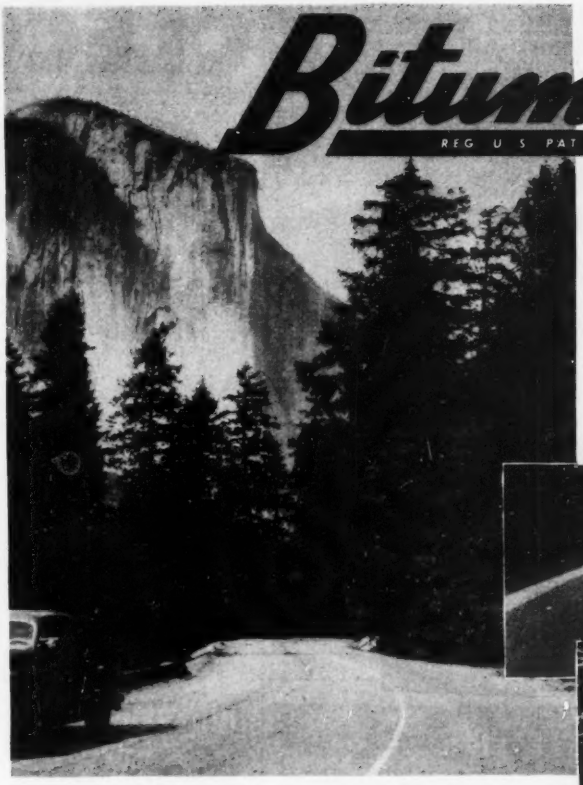
Bitumuls

REG U S PAT OFF.

has pioneered MANY PRODUCTS

1. Penetration Macadam

with Bitumuls Emulsified Asphalt



Yosemite Valley, California — Bitumuls Penetration Pavement

Maryland Test Road

Bar Harbor, Maine

From California's famed Yosemite Valley to hard rock Maine, there are over 50 million sq. yds. of **BITUMULS** Penetration Macadam.

The State of Maine started with **BITUMULS** Macadam over 18 years ago, adding more road mileage each year. This "tough" climate has proved the **Stability** and **Durability** of **BITUMULS** Macadam.

Further proof is Maryland's famous test road. Here, 19 years ago, engineers laid 14 different types of pavement on the same road. Today, the **BITUMULS** section is in excellent condition—while most of the other sections have long since been replaced or surfaced.

Engineers agree that no better pavement than macadam has ever been built. It attains greatest perfection using **Modern Equipment** and bonding with cold, quick-setting **BITUMULS Emulsified Asphalt.**

Stable in hot weather—smooth riding—non-skid, sealed surface.

Buy Bitumuls & Build Better Pavements

Ask for our BITUMULS BOOKLETS. They are factual, illustrated, and helpful — a valuable addition to your engineering library.

- Bitumuls Penetration Macadam . . . ☐
- Bitumuls for Maintenance . . . . . ☐
- Bitumuls Sand-Mix . . . . . ☐
- Bitumuls Handbook . . . . . ☐
- Hydropel—Admix for concrete . . . ☐
- Tennis Courts—Laykold & Grasstex . . ☐
- Fibrecoat—roof and metal coating . . ☐

The ASPHALT Twins

In the West

STANCAL ASPHALT & BITUMULS COMPANY

200 BUSH STREET • SAN FRANCISCO 4, CALIF.

Inglewood, Calif. • Oakland 1, Calif. • Portland 4, Ore. • Tucson, Ariz.

In the East

AMERICAN BITUMULS COMPANY

200 BUSH STREET • SAN FRANCISCO 4, CALIF.

Washington 6, D. C. • Baltimore 26, Md. • Perth Amboy, N. J.
Columbus 15, O. • St. Louis 17, Mo. • Baton Rouge 2, La.
E. Providence 14, R. I. • San Juan 23, Puerto Rico

Wyo., Casper—Parish of St. Anthony's, Rev. Thomas F. O'Reilly, Casper, plans by Leon C. Goodrich & Jan. W. Wilking, engrs. and archts., 226 E. 2 St., parochial school remodeling and addns. $250,000.

Alta., Edmonton—John Schadeck, 10410 135 St., twenty-one 1½ story, 24x32 ft. concrete, frame dwellings, 92 Ave. $200,000.

●**B. C., Vancouver**—British Pacific Properties, Ltd., Vancouver, plans by C. B. K. Van Norman, 540 Seymour St., shopping center. $1,000,000.

Man., Brandon—S. A. Magnacca, Brandon, 95 dwellings. $600,000.

N. B., Bathurst—James Hamet Dunn Hospital Bd., Bathurst, 50-bed hospital addn., $250,000; heating plant, $50,000.

N. B., Fredericton—Victoria Hospital Bd., Fredericton, hospital wing $175,000, nurses home $450,000, power house and laundry $175,000.

●**N. S., Halifax**—Maritime Telegraph & Telephone Co., 8892 Hollis St., Halifax, bldgs., facilities. Over $1,000,000.

Ont., Bronte—Owner, c/o G. Baseley, archt., 193 Forest Hill Rd., Toronto, 100 houses, Lakeshore Rd. Approx. $375,000.

Ont., Haileybury — Reverend Sisters of Mercy, Haileybury, plans by C. C. Woods, 12 E. Richmond St., Toronto, concrete, steel, brick addn. to St. Marys Sanitorium, $576,000. CD 10/12/48—ENR 10/25/45.

Ont., Hamilton—Y. M. C. A., 79 James St., plans by W. R. Souter & Assoc., 36 James St., 3 story, 60x100 ft., rein.-con. steel, brick Y. M. C. A. addn., swimming pool. $300,000.

Ont., Hearst—Roman Catholic Diocese of Hearst, Hearst, plans by H. S. Labelle, 3 Kelvin Ave., Outremont, cathedral church, $500,000.

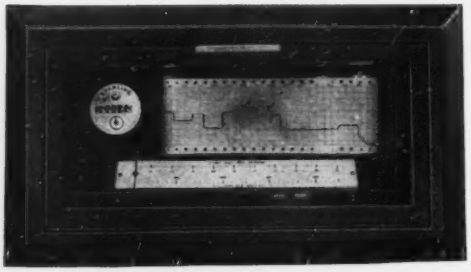
Ont., Orillia—Soldiers Memorial Hospital, P. Copeland, chn. Bd., Orillia, plans by J. E. Smith, 163 Wicksteed Ave., Toronto, hospital units. Approx. $250,000.

Ont., Port Arthur—Medical Arts Bldg., Inc., c/o Dr. H. Chipman, 120 High St., plans by McIntosh & Assoc., 118 Syndicate Ave., Fort William, medical center bldg. $250,000.

Ont., Port Hope—Trinity College School, Port Hope, Rev. P. A. Ketchum, pres., plans by Mathers & Haldenby, 15 St., Mary St., Toronto, memorial chapel. Approx. $250,000. CD 5/17—ENR 6/3.

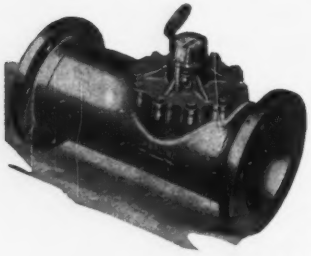
Que., Drummondville—Reverend Sisters of The Grey Nuns, Drummondville, St. Croix Hospital addn. Over $500,000.

SPARLING MAIN-LINE METERS



Accurate MAIN-LINE Measurement Pays

Efficient operation is based on actual figures—not guesswork! The Totalizer-Indicator-Recorder shown above gives you facts you *need* to know about flows in your lines 2-inch and up. The 60-day chart furnishes invaluable records. Auto-metered controls, too, may be added when you install a SPARLING Meter.



Equipment for YOUR Particular Needs

Consistently accurate measurement over a wide flow-range is assured, and you can make your own installation quite easily. A wide range of styles and sizes to meet your requirements.

Quotations and Bulletin 310 come at your request

The SPARLING *Manufacturers of* WATER MEASURING EQUIPMENT

LOS ANGELES 54...Box 3277 Terminal Annex
CHICAGO 8.....1500 South Western Ave.
BOSTON 8.....6 Beacon Street
DALLAS.....509 North Ervay Street
622 Broadway.....CINCINNATI 2
101 Park Avenue.....NEW YORK 17
1932 First Avenue.....SEATTLE 1

CLECO

...SPEEDS UP CONSTRUCTION JOBS

Cleco No. 5A Backfill Tamper speeds construction and reduces costs wherever there is a tamping job to be done.

Light in weight and well balanced for easy handling, the Cleco No. 5A Tamper will reduce your costs on backfill tamping of trenches and other earth-fill operations.

A Cleco field engineer is available to make a free demonstration of this money-saving tool.

Write for your copy of Bulletin 76-B.

Manufacturers of: Grinders, Sanders, Rotary Drills, Riveters, Sand Rammers, Chippers, Scaling Tools, Impact Wrenches, Screwdrivers, Hose Fittings, Sump Pumps.

CLECO DIVISION
of the REED ROLLER BIT COMPANY
P. O. Box 2119, Houston, Texas, U. S. A.

Que., Hanterive (Postal Dist. Comeau Bay)—Roman Catholic Diocese of Gulf of the St. Lawrence, Comeau Bay, cathedral church, **$300,000.**

●**Que., Montreal**—Memorial Concert Hall Com., c/o Dr. J. E. Lapierre, concrete hall, 300x300 ft. site, Park Ave. **$3,000,000.**

Que., Montreal—Owner, c/o S. Gerson, 1261 St. Alexander St., rein.-con. brick, stone apartment. **$350,000.** J. Stober, 1261 St. Alexander St., engr.

●**Que., Quebec City**—Roman Catholic School Comn., Quebec City, plans by Germain Chabot, c/o owner, 2 story, 55x120 ft., concrete, brick, stone school for Notre Dame of Pity Parish, **$250,000;** plans by Leo Turcotte, 308 St. John St., 3 story, 60x242 ft., concrete, brick, stone school for St. Albert le Grand Parish, **$400,000;** plans by Aurele Bigonesel, 52 St. Louis St., 100x213 ft., concrete, brick, stone school for St. John the Baptist Parish D'Aiguillon St. **$307,500.**

Que., Sherbrooke—Roman Catholic Diocese of Sherbrooke, 54 Convent St., Sherbrooke, cathedral, Marquette St. **$500,000.**

Que., Val d'Or — Reverend Filles de la Sagerale, Val d'Or, St. Sauveur hospital addn. Over **$350,000.**

Que., Westmount—Unity Boy's Club, 1225 Greene Ave., plans by Archibald & Assoc., 1440 W. St. Catherines St., Montreal, gymnasium. **$175,000.**

Sask., Saskatoon—St. Pauls Hospital, Saskatoon, hospital addn. Approx. **$350,000.**

INDUSTRIAL BUILDINGS

●**Ala., Mobile** — PLANT — Hollingsworth & Whitney Co., Magazine Point, plant addn. Over **$100,000.**

Calif., Fresno—WAREHOUSE, etc.—Dallman Co. of Fresno, 3480 Railroad Ave., 40,000 sq. ft. warehouse and office and outdoor storage facilities, **$300,000.**

●**Calif., Mendota**—SUBSTATION—Pacific Gas & Electric Co., 245 Market St., San Francisco, Panoche substation, near here. **$3,157,000.**

Calif., Redwood City—PLANT, etc.—Union Oil Co. of California, 425 First St., San Francisco, petroleum products distr. plant and temporary wharf. **$125,000.**

Calif., San Bernardino—BAKERY—Barbara Ann Baking Co., plans by Bennett & Bennett, 1165 E. Colorado St., Pasadena, 1 and part 2 story, rein.-con. bakery addn. **$200,000.**

●**Calif., San Francisco**—GAS TANK—Pacific Gas & Electric Co., 245 Market St., gas tank, 23 St. and Pennsylvania Ave. **$2,191,375.**

Colo., Denver—MARKET—Growers Public Market Assn., Frank A. Ciancio, pres., Denargo Market, 29 and Broadway, plans by Roland L. Linder, 507 Insurance Bldg., Denargo Market imprvs., incl. converting 80 stalls into storage space and store rooms for rental purposes, 29 and Broadway. **$250,000.**

Ga., Chamblee—PLANT—American Hospital Supply Corp., 199 Marietta St., Atlanta, mfg. plant. **$250,000.**

Ill., Chicago — WAREHOUSE, etc. — Fairbanks Morse & Co., State St. and 16 St., plans by Epstein & Sons Co., 2011 W. Pershing Rd., 1 story warehouse and showroom. **$300,000.**

Ill., Chicago—PLANT—Illinois Packing Co., 911 W. 37 Pl., plans by N. K. Ball, 800 S. Cuyler Ave., Oak Park, and Shaw, Metz & Dolio, 208 S. LaSalle St., 1 story, brick, steel plant addn. **$200,000.**

Ill., Chicago—PLANT—Naylor Pipe Co., 1230 E. 92 St., 1 story, brick, steel plant. **$130,000.**

Ill., Chicago—PLANT—S. & C. Electric Co., 4435 N. Ravenswood Ave., 1 story plant, 6435 Ridge Rd. **$168,000.** Engineering Systems, Inc., 221 N. LaSalle St., engr.

Ill., Chicago — PLANT — E. H. Sargent & Co., 155 E. Superior St., plans by Olsen & Urbain, 5 S. Wabash Ave., plant, **$300,000.**

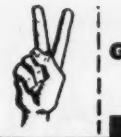
Ill., West Chicago—PLANTS—Northwestern Chemical Co., 400 N. Michigan Ave., Chicago, 1 and 3 story, three chemical plant structures. **$300,000.**

●**Ind., Fort Wayne**—TERMINAL and YARD FACILITIES, etc.—New York, Chicago & St. Louis R. R. Co., H. F. Whitmore, ch. engr., Terminal Tower, Cleveland 1, O., relocation, expansion terminal and yard facilities, new engineer terminal, repair facilities and addnl. tracks on 50 acre site, 4 mi. east of here, incl. 90x130 ft. engineer house, 110 ft. turntable, sand house, yard office and locker bldg., water facilities, coal dock cinder conveyer, car repair facilities, etc. **$2,000,000.**

Ia., Maquoketa—CREAMERY—Farmers Union Co-operative Creamery Co., Maquoketa, Buckhorn Creamery, **$100,000.**

Kan., Kansas City—WAREHOUSE—General Motors Coach Div., General Motors Corp., 2540 McGee St., plans by C. E. Keyser, 609 Minnesota Ave., warehouse, **$150,000.**

Ky., Hazard—PLANT—East Kentucky Coal Cleaning Corp., c/o R. B. Bunton, Hazard, coal cleaning plant. **$100,000.**



GET TWICE THE LIFE WITH CAINE

CORR-PLATE STEEL PILING!

1. STANDARD

2. INTERLOCKING!

Now Caine Corr-Plate Steel can be ordered in a new steel alloy which gives it 100% greater corrosion resistance. This practically doubles the service life of your piling. Tests also prove this new alloy to be 25% stronger, giving you equal strength in a 25% lighter piling.

Caine Corr-Plate Steel Piling can be used over and over again, thus distributing its cost over a great many jobs. It's nestable, easy to drive, and watertight.

The world over, Caine Corr-Plate Steel Piling is being used for Foundations, Dams, Retaining Walls, Docks, Levees, Bulkheads, Sewers, Disposal Plants and hundreds of other jobs.

Now, More Than Ever Before... STRONGEST Per Pound Weight

2894

CAINE STEEL COMPANY

Steel Piling Division, 1820 N. Central Avenue, Chicago 39, Illinois

YEARS of unfailing operation have established the reputation of Earle operating machinery on movable bridges. For this reason Earle equipment is so often selected to operate railroad and highway bridges of all sizes. Earle experience and "over-sized" construction assure a minimum of wear and years of trouble-free, economical operation with little or no maintenance. Earle engineers will help you meet your gear or machinery problem, routine or unusual—get in touch with us, now. Or, if you want further information first, write for our NEW catalog containing Earle operating machinery. THE EARLE GEAR & MACHINE COMPANY, 4717 Stenton Avenue, Philadelphia 44, Pa. Sales Offices: 149 Broadway, New York 6; 901 Davis Avenue, Pittsburgh 12, Pa.

INCORPORATED IN EARLE OPERATING MACHINERY

EARLE GEARS

ACCURATE FACTS WILL REDUCE COSTS FOR SPECIFICATION MATERIALS

GILSON *Mechanical* TESTING SCREEN

The GILSON Testing Screen gives you prompt, accurate information about—

1. Your finished products
2. Your raw material
3. Semi-processed material at any stage

Knowing these facts about your products —the fluctuating changes in your operations enable you to operate your plant intelligently and more economically.

This machine is designed for the efficient sizing of test samples of crushed stone, gravel, slag and similar materials. It accommodates samples up to one cubic foot, making from two to seven separations simultaneously, in five minutes or less.

The screen trays and dust pan are sturdy, built to stand rough usage—will not bend or warp. All trays and dust pan are balanced to the same exact weight—thus eliminating necessity for transferring sample before weighing. Screen wire (ASTM standards) is held under tension by a tightening arrangement which insures proper vibration, prevents sagging and permits easy replacement.

For test sizing sand and similar fine materials, as standard screen trays are usually too large, an attachment (shown below left) may be furnished for using eight-inch sand sieves in conjunction with the vibrating unit.

Where exacting specifications are required the Gilson Screen eliminates guesswork—avoids errors and reduces operating delays. It also makes possible a controlled and truly guaranteed product.

For fast, accurate sizing of coarse or fines from 4" to 200-mesh specify a Gilson Testing Screen.

GILSON SCREEN CO. BOX 186 MERCER, PENNA.

●**Ky., Pineville** — GENERATING PLANT — Kentucky Utilities, First National Bank Bldg., Lexington, 30,000 kw. generating plant, **$5,000,000.**

La., DeRidder—WAREHOUSE, etc.—Beauregard Parish Electric Co-operative, De Ridder, warehouse and offices, **$116,000.** George C. Henry & Co., 1007½ Texas Ave., Shreveport, engrs.

La., Manchester (near Lake Charles)—MILL —Farmers Rice Milling Co., Inc., Manchester, reconstructing rice mill, **$125,000.**

Mich., Detroit—PARKING BLDG.—J. L. Hudson Co., 1206 Woodward St., plans by Smith, Hinchman & Grylls, 800 Marquette Bldg., 4 story parking bldg., to cover one city block, 14 store units, ground floor.

●**Mich., Detroit**—PLANT—McCarthy International Tubing Corp., 4837 Wyoming St., plant, **$3,000,000.**

Minn., Minneapolis—SALES and SERVICE—Grossman Chevrolet Co., 1304 E. Lake St., plans by Libenberg & Kaplan, 51 S. 13 St., 1 and 2 story, 127x148 ft. sales and service bldg. **$100,000.**

Mo., St. Louis—WAREHOUSE, etc.—Minneapolis-Honeywell Regulator Co., 4030 Chouteau Ave., Zone 10, plans by Wm. B. Ittner, Inc., 408 Bd. Educ., Bldg., 911 Locust St., Zone 1, 1 story, 69x96 ft., brick, concrete warehouse and office, air-conditioning, 4354 Olive St.

●**Mo., St. Louis County** — PLANT — Carter Carburetor Corp., 2840 N. Spring Ave., St. Louis, Zone 7, rein.-con. brick, steel plant, on 28 acre site, outside city limits of Olivette, incl. parking lot, recreational facilities, landscaping, etc., **$1,000,000.**

Mont., Kalispel—PLANT—Central Heating Co., Kalispel, central heating plant and equip. **$500,000.**

Neb., Lincoln — PLANT — Lincoln Journal, 900 P St., plans by Davis & Wilson, 225 Stuart Bldg., Lincoln, newspaper plant, **$250,000.**

Neb., Omaha—SUBSTATION—Omaha Public Power Dist., 17 and Harney Sts., substation, 19 and Center Sts. **$150,000.** C. W. Minard, c/o owner, ch. engr.

N. Y., Brooklyn—GARAGE, etc.—Nost-Mont Garage, Inc., 361 Broadway, New York, Zone 13, plans by Kitzler & Nurick, 66 Court St., Zone 2, garage and store bldg. alterations, 956-78 Nostrand Ave. **$100,000.**

N. Y., New York—LOFTS, etc.—Grosfeld House, Inc., 320 E. 47 St., Zone 17, plans by Eugene Schoen & Sons, 19 E. 53 St., Zone 22, lofts and showroom bldg. 215-19, E. 58 St. **$250,000.**

N. D., Minot—GARAGE—Westlie Motor Co., Minot, plans by G. H. Bugenhagen, Minot, garage. **$160,000.**

●**O., Brooklyn (Sta. Cleveland)**—PARTS—Cleveland Diesel Engine Div., General Motors Corp., 2106 W. 106 St., Cleveland, 150,000 sq. ft. service parts bldg. near No. 3 Plant. **$2,000,000.**

O., Columbus—FACTORY—Columbus Plastic Products, Inc., 1625 W. Mound St., factory addn., west of present structure. **$50,000.**

Pa., Altoona—MANUFACTURING—Altoona Enterprises, Inc., c/o Chamber of Commerce, Commerce Bldg., plans by Hunter, Caldwell & Campbell, 3601 5 Ave., 1 story, 160x320 ft., steel, brick on concrete back up mfg. bldg. **$2500,000.** Blair Shirt Co., 14 Logan Bldg., lessee.

Pa., Brackenridge—BLOOMING MILL—Alleghany Ludlum Steel Co., Oliver Bldg., Pittsburg, brick, concrete, metal siding, steel blooming mill addns., alterations. **$150,000.**

●**Pa., Bristol** — PLANT — Kaiser-Fleetwings, Inc., Bristol, porcelain enameling plant **$2,160,000;** main factory bldg. addn. for mfg. bathroom and kitchen fixtures, **$2,000,000.** CD 10/6—ENR 10/28.

Pa., Collegeville—HEATING PLANT—Ursinus College, Collegeville, central heating plant sys., bldg., piping, etc. Over **$100,000.**

●**Pa., Lancaster** — RESEARCH LABORATORY — Armstrong Cork Co., Liberty and Mary Sts., plans completed by Shreve, Lamb & Harmon Assoc., 11 E. 44 St., New York, N. Y., research laboratory. **$3,500,000.** CD 2/26/48—ENR 3/4/48, under LB.

Pa., Phila.—STORE HOUSE—Pennsylvania R. R., L. P. Struble, ch. engr. (Eastern Region) Broad St. Station Bldg., 1617 Pennsylvania Blvd., Zone 4, plans by George Wharton Pepper, Jr., Lewis Tower Bldg., store house, 30 St. Station. **$200,000.**

Pa., Phila.—RAILWAY EXPRESS and STATION SERVICE—Pennsylvania R. R., L. P. Struble, ch. engr. (Eastern Region) Broad Street Station Bldg., 1617 Pennsylvania Blvd., Zone 4, railway express bldg., and station service bldg., at 30th Street Station. Over **$250,000** each.

●**Pa., Phila.**—REFINERY, etc.—Socony Vacuum Oil Co., Inc., 58 St. and Schuylkill River, refinery addn. and storage facilities. **$18,000,000.**

R. I., Providence — FACTORY — Friendship Realty Co., c/o DiMitri & DiMitri, archts., 17 Exchange St., 3 story, brick, steel factory, Friendship St. **$100,000.**

R. I., Providence—PLANT—Meldon Store Fixtures Co., Inc., 314 Blackstone St., 2 story, 15,500 sq. ft. cinderblock plant and various stores, Washington, Westminister and Lafayette Sts. **$100,000.**

GREATER EFFICIENCY AND ECONOMY THE DORSEY

Select the DORSEY Low Bed Machinery Trailer with Confidence!

Model M 15-20-25 Tons

Model MT 35-40-50-60-75 Tons

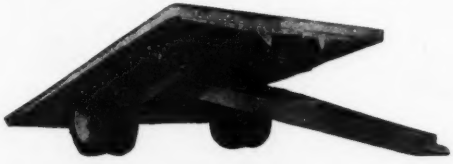
Model MK 10-15 Tons

Contractors and Engineers throughout the nation are selecting the Dorsey Low Bed Heavy Duty Semi or Full Trailers to move heavy equipment . . . to "Make the Heavy Jobs Light."

Dorsey Low Beds are available in four models — M — MK — MTS and MT — with capacities from 10 T to 75 T — a model for every need and state law load limit.

"Engineered for minimum weight . . . safe road performance . . . new low platform height . . . new hydraulic, air or vacuum brakes, all are features of advanced design that insure *low, dependable, operating economy.*"

DORSEY TILT-TO-LOAD TRAILERS



A-7 7,500 lb. A-15 15,000 lb. A-20 20,000 lb.

Model MTS

15-20-25-30-35 Tons

DORSEY TRAILERS

ELBA ALABAMA, U. S. A.

Tenn., Fayetteville—PLANT—Kraft Foods Co., 500 N. Peshtigo St., Chicago, Ill., mfg. plant. **$300,000.**

Tex., Dallas—SHOP, etc.—W. R. Fine Galleries, 1818 Main St., plans by Everett V. Welch, Construction Bldg., art service, shop, display. **$100,000.**

Tex., Dallas—SERVICE SHOP, etc.—Marlin Assoc., 2401 Main St., appliance service shop and warehouse. **$200,000.**

Tex., Dallas—WAREHOUSE—Southern Express, Inc., c/o Cornish, ex. vice pres., 3131 Oak Lane, plans by Herman G. Cox, 501 N. P. Anderson Bldg., Fort Worth, 1 story, 56,000 sq. ft. concrete, tilt-up walls, steel deck warehouse, Driven Ave. **$250,000.**

●**Tex., Grand Saline** — PLANT — Morton Salt Co., c/o J. Y. Bell, mgr., Grand Saline, plant bldgs., incl. exploration plant, addns. to existing bldgs. at site of Morton's Kleer Mine, outside city limits. **$2,250,000.** H. K. Ferguson Co., 1752 E. 11 St., Cleveland, O., consult. engr.

Tex., Grand Saline — PACKING PLANT — Morton Salt Co., Grand Saline, project abandoned reconstructing portion packing plant. **$200,000.** CD 11/4—ENR 11/18.

Tex., Houston—WAREHOUSE—M.De George Estate, c/o Ambassador Hotel, 919 Fannin St., plans by Garrison King, 2130 Harold St., warehouse. **$150,000.** CD 2/23

Tex., Houston — PLANT — Houston Pipe & Steel, Inc., 4300 Calhoun Rd., remodeling (war) plant into modern plant for industrial usage. **$250,000.**

Tex., Houston — INDUSTRIAL—Jarecki Mfg. Co., 5920 Navigation Bldg., plans by G. Ancira, Scanlan Bldg., 2 story, 40 x 111 ft. masonry type industrial bldg., oil field shop and supplies. **$175,000.**

Tex., Houston—CANNERY—Oceanic Foods, c/o C. W. Edwards, 1009 Jackson St., tuna-fish cannery, 150 tons daily cannery capacity, freezing units for 1,000 tons at a time. **$600,000.**

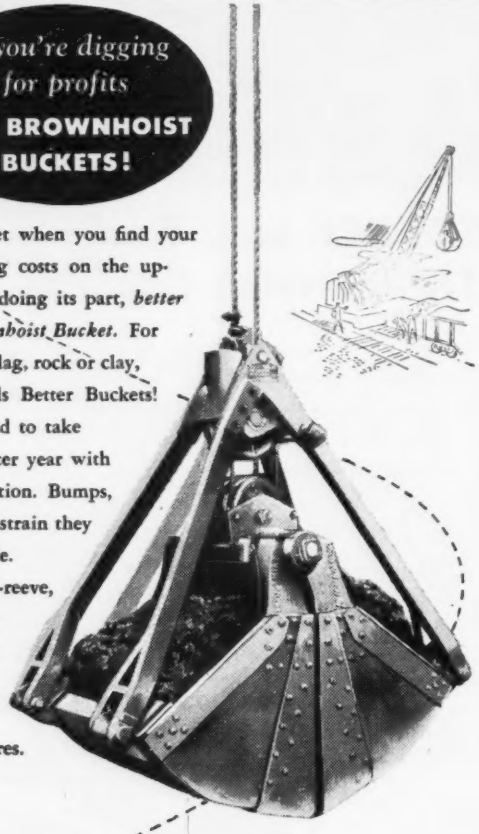
Tex., Houston—PLANT—Standard Roofing Co., c/o W. H. Marshall pres., 4910 Navigation Blvd., 25,400 sq. ft. plant, 5500 Blk Armour Dr. in Clinton-Lockwood Industrial Dist. **$100,000.**

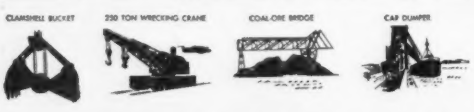
Tex., San Antonio — PLANT — San Antonio Chili Canners, 422 Chestnut St., 25,000 sq. ft. floor space chili canning plant. **$100,000.**

Tex., San Antonio—LABORATORY, etc.—Southwest Research Institute, c/o Tom Slick, Milam Bldg., automotive research laboratory and experimental shop. **$100,000.**

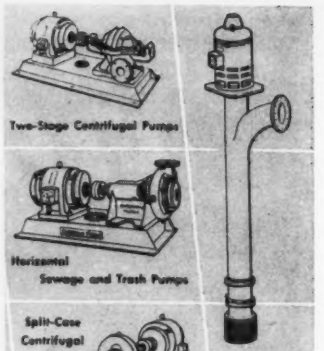
If you're digging for profits
BUY BROWNHOIST BUCKETS!

Check your bucket when you find your materials handling costs on the upgrade. If it isn't doing its part, *better change to a Brownhoist Bucket.* For coal, ore, sludge, slag, rock or clay, Brownhoist Builds Better Buckets! They're engineered to take full bites, year after year with trouble-free operation. Bumps, shocks, stress and strain they take in their stride. Available in rope-reeve, power wheel and link type. *Write for latest catalog* of Brownhoist Buckets and features.



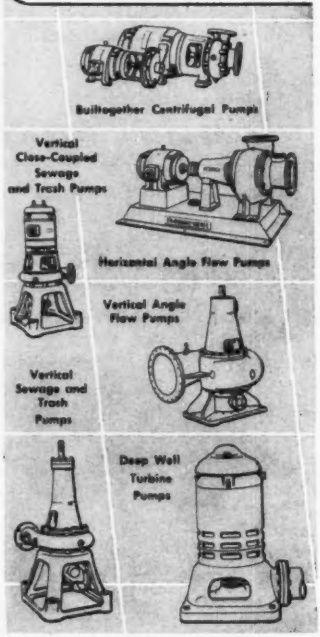


INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICH.



for Pumps...
THAT DELIVER
plus performance
lasting dependability
unsurpassed economy

FAIRBANKS-MORSE
A name worth remembering
DIESEL LOCOMOTIVES • DIESEL ENGINES • PUMPS • SCALES
MOTORS • GENERATORS • STOKERS • RAILROAD MOTOR CARS
and STANDPIPES • FARM EQUIPMENT • MAGNETOS


Builtogether Centrifugal Pumps
Vertical Close-Coupled Sewage and Trash Pumps
Horizontal Angle Flow Pumps
Vertical Angle Flow Pumps
Vertical Sewage and Trash Pumps
Deep Well Turbine Pumps

Tex., Stinnett—PLANT—Stacey-Dresser Engineering Div. (Dresser, Interests), 1900 Superior St., Cleveland, O., desulfo plant, 2,750,000 cu. ft. daily capacity of removing excess hydrogen sulfide from natural gas. **$500,000.**

Tex., Sugarland — PLANT — Imperial Sugar Co., plans by Addis E. Noonan & Assoc., 803 American Hospital and Life Bldg., San Antonio, and 1760 W. Gray Ave., Houston, 5 story and monitor, structural steel, rein.-con. remelt sugar plant unit. **$200,000.**

Tex., Tyler—PLANT—Bryant Heater Div., Tyler, 30,000 sq. ft. plant expans. **$100,000.**

●**Wash., Kennewick** — PLANT — Welch Grape Juice Co., Westfield, N. Y., grape juice plant. **$1,000,000.**

Wash., Seattle—GARAGE SHOP—Northwest Greyhound Lines, 8 Ave. and Stewart St., Zone 1, plans by V. W. Voorhees, 2106 30 Ave. S., bus garage shop addn. **$250,000.**

Wash., Spokane — WAREHOUSE — Seattle Steel Co., 1220 4 Ave. S., Seattle, 100x300 ft. warehouse to operate under name of Inland Empire Steel Co. **$200,000.**

Wis., Racine—FREIGHT TERMINAL—Service Transport Co., 2-5 St., 1 and 2 story, 181x282 ft., steel, concrete, brick freight terminal, concrete fdn. Hugo Bothe, 5533 6 Ave., Kenosha, consult. engr.

Alta., Edmonton—GARAGE—Borrows Motors Ltd., 10110 106 St., 1 story, 100x120 ft. concrete, steel, brick garage. **$100,000.**

B. C., Chemainus — MILL — Victoria Lumber Co. Ltd., Chemainus, mill. **$200,000.** Pearson & Phillips, 1701 W. Broadway, Vancouver, engrs.

B. C., Deep Bay (Postal Dist. Union) — PLANT — British Columbia Cement Co. Ltd., Dep Bay, plant. **$500,000.**

B. C., Falkland—MINE DEVELOPMENT—Western Gypsum Ltd., Calgary, Alta., palagonite deposit development. **$100,000.**

●**B. C., Nanaimo**—PLANT—H. R. MacMillan Export Co. Ltd., 837 W. Hastings St., Vancouver, plant, **$3,750,000.**

●**B. C., Quesnel**—MILL—Bowater Ltd., St. Johns, Newfoundland, and London, England, pulp mill. **$1,000,000.**

Man., Winnipeg—GARAGE—Carter Motors Ltd., 275 Maryland St., plans by L. Finch, C.P.R. Bldg., 2 story, brick garage. **$150,000.**

Ont., London — FOUNDRY — General Steel Wares, 199 River St., Toronto, foundry addn., **$500,000.**

Ont., North Bay — PLANT — North Bay Publishing Co., Klock St., plans by N. A. Armstrong, 19 Melinda St., Toronto, 2 story, 32x66 ft. plant, Main St. Approx. **$250,000.** CD 9/3—ENR 9/9.

●**Ont., Toronto** — FACTORY — Lever Bros., Ltd., 229 Eastern Ave., factory, Eastern Ave., south of Keating St. Approx. **$1,000,000.**

Ont., Windsor—FACTORY—Canadian Motor Lamp Co., Ltd., 2429 Seminole St., plans by G. A. McElroy, 152 Pitt St., 1 story, 40x480 ft. concrete, brick factory. **$150,000.**

P. E. I., O'Leary—PLANT—Fred Champion, electric plant.

Que., Montreal—PLANT—Do So Iron & Metal Co., Ltd., 5814 W. Sherbrooke St., 1 story, concrete, steel plant. **$150,000.**

Que., Montreal—BUS GARAGE—Provincial Transport Ltd., 1188 Dorchester St., plans by Shorey-Ritchie & Douglas, 2048 Union Ave., bus garage. **$150,000.** CD 3/6/46.

Que., St. Johns—MILL—Doric Textiles, c/o Joseph M. Besso, North American Commercial Corp., 150 Broadway, New York, N. Y., U. S. A., mill, **$500,000.**

●**Que., St. Johns**—PLANT—Les Usines Textiles Al-Kahira, c/o J. M. Besso, 150 Broadway, New York, N. Y., U. S. A., plant, Mackenzie King St. Approx. **$2,000,000.**

Que., St. Lambert—PLANT—Eugene Gagnon Assoc., c/o Dpt. Mines, Quebec City, plant mfg. vitrolite. **$100,000.**

Que., Sherbrooke—PLANT—Eugene Gagnon Assoc., c/o Dpt. Mines, Quebec City, plant and 400 acre property development of Petronite deposits. **$750,000.**

Sask., Saskatoon—GARAGE—Mid-City Motors, Ltd., J. B. Sangster, genl. mgr., Second Ave. and Nineteenth St., garage. Approx. **$125,000.**

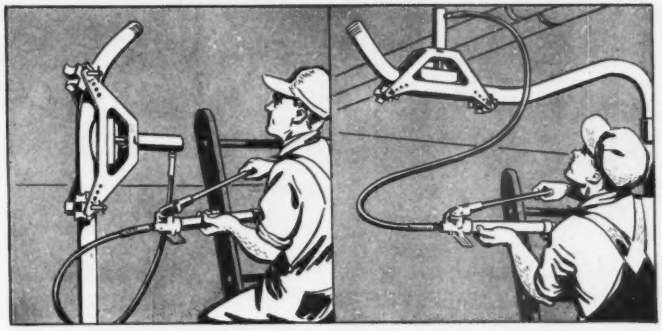
UNCLASSIFIED

Alabama — RURAL DISTRIBUTION LINES — Southern Pine Electric Co-operative, Brewton, 185 mi. distr. lines, sys. imprvs, two-way radio communication sys. and completion of previously approved constr., Conecuh Co. **$490,000.**

Arizona — RURAL DISTRIBUTION LINES — Trico Electric Co-operative Tucson, 53 mi. rural distr. lines and two-way radio communication sys., Pima Co. **$190,000.**

Arkansas—RURAL DISTRIBUTION LINES —Arkansas Valley Electric Co-operative Corp., Ozark, 400 mi. rural distr. lines, to serve 1,000 customers in Crawford, Franklin, Johnson, Newton, Pope, Yell, Scott, Logan and Sebastian Counties. **$400,000.** H. B. Gieb & Assoc., 1207 Texas Bank Bldg., Dallas, Tex., consult engrs. CD 7/16—ENR 8/5.

You Get 4 Exclusive Advantages with a Blackhawk Pipe Bender

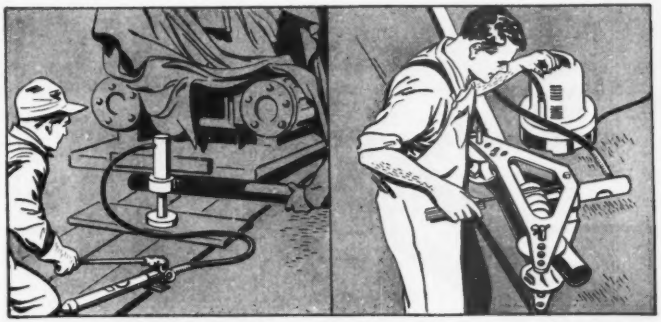


1. WORKS IN ANY POSITION

A Blackhawk Porto-Power Pipe Bender is completely versatile. It works in any position — vertical — horizontal — or at any angle. The remote control Porto-Power pump makes this extra utility possible.

3. TAKE IT RIGHT TO THE JOB

A Blackhawk pipe bender's light weight and all-directional operation lets you bend pipe right at the installation instead of lugging pipe to the bender. Saves time — work — steps — makes it easier to fit bends to obstructions.



2. DO OTHER WORK

The Blackhawk Porto-Power hydraulic unit detaches to work with numerous other Porto-Power attachments to handle dozens of lifting, pulling, pushing, clamping, pressing, bending and spreading operations.

4. ELECTRIC OPERATION IF DESIRED

P-182 electric pump permits *finger-tip control* pipe bending — speeds work —leaves hands free for measuring. Ideal for continuous bending of elbows, etc. P-182 also can convert any other hydraulic equipment to power operation.

$30A Pipe Bender with 10-ton hydraulic unit handles rigid conduit and pipe in 1, 1¼, 1½ and 2" diameters.

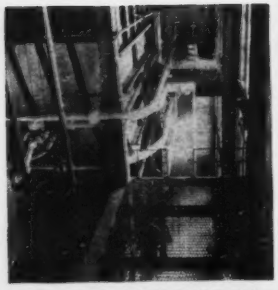
$36 Pipe Bender with 20-ton hydraulic unit handles rigid conduit and pipe from 1¼ to 4" in diameter.

Your Blackhawk Industrial Supply Distributor will give you full information on cost-cutting Blackhawk Porto-Power Pipe Benders.

A Product of BLACKHAWK MFG. CO., Dept. P-3639 Milwaukee 1, Wis.

BLACKHAWK®

HANDJACKS • WHEELED JACKS • WRENCHES • PORTO-POWER • RECK-RACK



HOW SAFE ARE THE FLOORS OF YOUR PLANT

Hundreds of manpower hours are wasted —thousands of dollars lost—all because of slipping accidents—on floors that were supposed to be safe. *Don't let this happen to you—be positive—use*

KLEMP

OPEN STEEL GRATINGS

Klemp Riveted Gratings give *positive* non-slip footing inside or out. They are cut to fit specifications—any location. They permit free circulation of air, heat and passage of light in addition to being fireproof.

Write today for large illustrated Catalog Showing Typical Installations

Ask about: Klemp Hexteel, heavy duty floor armor and Klemp Floorsteel, flexible floor armor that rolls out like a rug.

WM. F. KLEMP COMPANY

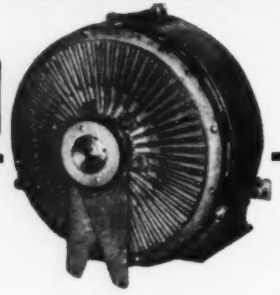
"Steel Flooring Specialists"

6608 S. Melvina Ave. Chicago 38, Ill.

DIAMOND RIVETED GRATING

A NEW and BETTER *NOW available*

TAGLINE



"Tag-Master"

Advantages you never had before!

Act Now — Mail Coupon Today

MORIN MFG. CO. 946 ELM ST., WEST SPRINGFIELD, MASS.

Please send us TAGMASTER details and cost

Equip Data.....
Make.....
Model.....
Size.....

Signed.....
Company.....
Address.....
.....

Ark., Little Rock—PLAYGROUNDS—Little Rock Parks & Recreation Dpt., Little Rock, approved bond issue, 4 playgrounds, community house and swimming pool for negroes. **$359,000.**

Calif., Long Beach—SPORTS BLDG., etc.—Bd. Educ., 715 Locust Ave., plans by Kenneth S. Wing, 30 Linden Ave., under bleachers sports bldg., rifle range, locker room, storage room, etc. at Jordan High School. **$123,000.**

Calif., Los Angeles—BATHHOUSE, etc.—Los Angeles City Bd. Recreation & Parks, 305 City Hall, 30x110 bathhouse and 16x120 ft. swimming pool and bleachers at Tujunga. **$120,000.** Holmes & Narver, 824 S. Figueroa St., consult. engrs.

Conn., Bridgeport—DOCK IMPRVS., etc.—Jasper McLevy, mayor, City Hall, imprv. section dock and parking space, **$125,000.** Henry L. Rowland, City Hall, city engr.

Conn., Norwalk — PLAYGROUNDS — City, Irving J. Freese, mayor, City Hall, paved sections various playgrounds, **$150,000.** Paul J. James, City Hall, city engr. CD 3/23/44—ENR 4/6/44.

Conn., Norwalk—STADIUM—City, Irving C. Freese, mayor, City Hall, concrete sports stadium, incl. athletic field and stands, **$250,000.** Paul J. James, City Hall, city engr. CD 2/1/47 —ENR 4/6/47.

Conn., Norwalk—MUNICIPAL ELECTRIC EXPANSION—City, Third Taxing Dist., Norwalk, municipal electric expans., enlargement electric power facilities, **$250,000.**

Florida—RURAL DISTRIBUTION LINES—Lee County Electric Co-operative, Ft. Myers, 35 mi. rural distr. line, sys. imprvs., Lee Co. **$150,000.**

Ga., Atlanta — PARK — City, plans by William C. Pauley, 140 Peachtree St., negro park in Crogman School Section, incl. swimming pool, bath house and athletic field. **$375,000.**

Ga., Augusta — SWIMMING POOLS — City, plans by Willis Irvin, Augusta, swimming pool on Steed School grounds, over **$50,000**; plans by E. Lynn Drummond & Lyman, H. Robertson, Augusta,, swimming pool in Allen Park, over **$50,000.**

Idaho — RURAL DISTRIBUTION LINES — Idaho County Light & Power Co-operative Assoc., Grangeville, 22 mi. electric distr. line and sys. imprvs., Idaho Co. **$160,000.**

Illinois — RAILROAD — Illinois Central R.R., C. H. Mottier, vice-pres. and ch. engr., 135 E. 11 St., Chicago, 9.5 mi. railroad line into coal fields of Berry and Jefferson Counties, from Hois, eastward to mine of Chicago, Wilmington and Franklin Coal Co.

●**Ind., Ft. Wayne** — TERMINAL — New York, Chicago & St. Louis R. R., H. F. Whitmore, ch. engr., Terminal Tower, Cleveland, O., engine terminal, car repair facilities, addnl. tracks, **$5,000,000.**

●**Kentucky** — RURAL DISTRIBUTION LINES — Warren Rural Electric Co-operative Corp., Bowling Green, 215 mi. rural distr. lines, sys. imprvs., two-way radio communication sys., headquarters facilities, Warren Co. **$1,000,000.** CD 2/5/48—ENR 2/19/48.

●**N. J., Hoboken** — PIER — Port of New York Auth., 111 Eighth Ave., New York 11, N. Y., restoring, developing federally owned pier. **$17,000,000.**

●**N. J., Jersey City** — MARINE TERMINAL — Port of New York Auth., 111 Eighth Ave., New York 11, N. Y., 2-pier marine terminal between Morris Canal Basin and Exchange Pl. **$13,000,000.**

●**Ohio** — TRACK ALIGNMENT IMPRVS. — Pennsylvania Railroad, D. L. Sommerville, ch. engr. (Central Region), Pennsylvania Station, Pittsburgh 22, Pa., imprv. track alignment and considerable reduction in curvature, incl. modernizing Tunnel No. 5, 3,260 ft. long west of Gould, **$815,000**; addnl. trackage constructed east of present tunnel; Tunnel No. 6, 472 ft. long will be replaced with a cut, $1,828,500; Tunnels Nos. 7 and 8, 15 mi. west of Steubenville, to be bypassed by constructing new line, **$3,295,100**; Tunnel No. 10, 1,420 ft. long and located west of Bowerston, incl. new alignment of track and construction 900 ft. tunnel. Total est. **$8,800,000.**

●**O., Toledo**—SUBTERRANEAN PARKING GARAGE — City, City Hall, preliminary sketches by Wernert, Taylor, Sanzenbacher & Morris, Nicholas Bldg., subterranean parking garage under Courthouse Square with roof about 2 ft. under current sidewalk level. **$1,000,000.**

Oklahoma—RURAL DISTRIBUTION LINES —Alfalfa Electric Co-operative, Cherokee, 193 mi. rural distr. lines, Alfalfa Co. **$350,000.** G. P. Easley, Cherokee, consult. engr. CD 1/14—ENR 2/3.

Oklahoma—RURAL DISTRIBUTION LINES —Caddo Electric Co-operative, Binger, 314 mi. rural distr. lines, Caddo Co. **$635,000.** C. H. Guernsey & Co., 1414 N. Robinson St., Oklahoma City, consult. engrs. CD 1/14—ENR 2/3.

Oklahoma—RURAL DISTRIBUTION LINES —Kay Electric Co-operative, Blackwell, 139 mi. rural distr. lines, sys. imprvs., incl. 12 mi. new tie lines and completion previously approved constr., Kay Co. **$470,000.**

THIS JOB ON A BUSY STREET CALLED FOR THE PUMP THAT STAYS BUSY!

North Fourth Street in Milwaukee, Wisconsin, is a busy thoroughfare, especially the block between West Michigan Street and Wisconsin Avenue. To lay a new, larger sanitary sewer on this heart-of-the-city job, contractor Otto P. Seefeld had to have equipment that would keep busy without fail.

In the illustration, two Marlow Self-Priming Centrifugal Pumps (a 4-inch 40M and a 30-inch 20M) are shown by-passing sewage as the construction of the new line progresses. In this service these pumps were called on to pump continuously. Large business buildings in the area and a Y.M.C.A. building across the street were depending on them.

The contractor depended on these Marlows, too. There was no room here for a pump that couldn't stay on the job without attention.

A Marlow Water Wizard stays busy. It doesn't quit pumping and need to be reprimed. It doesn't need adjustment or manipulation and there are no parts to jam or cause trouble. It doesn't hold up work to be cleaned. You can't beat a dependable Marlow Water Wizard.

Your files should contain the catalog on the World's largest line of construction pumps. Ask your nearest Marlow distributor or write factory.

MARLOW PUMPS
RIDGEWOOD, NEW JERSEY

When you need specific information on materials, equipment or services, reach for your Sweet's File, Engineering (the big blue file). It contains 345 manufacturers' catalogs full of useful information on thousands of products . . . from absorbers—gas, to zinc galvanizing. Cross indexing speeds finding.

If Sweet's File, Engineering, is not available in your office, make request immediately for application form. Files are distributed FREE to qualified organizations and individuals.

Sweet's

CATALOG SERVICE

for easier, faster selection of products

119 W. 40th ST., NEW YORK 18, N. Y.

CONSTRUCTION REPORTS

Bids—Contracts—First Section

WATER SUPPLY

BIDS ASKED

March 23

N. J., Camden—City, watermains Cooper St. Over $50,000. CD 6/18—ENR 7/7.

April 1

Ark., Searcy—City, water and sewerage sys. extens. $210,000. K. W. Lefever, Gazette Bldg., Little Rock, engr. CD 10/6—ENR 10/28.

†Idaho—Bureau Reclamation, Dpt. Interior, Lewiston, water treatment plant, Lewiston Orchards, Lewiston Orchards Proj., Spec. 2596.

O., Ashland—City, WW extens., 1,500,000 gal. per day expans. of existing 1,500,000 gal. per day water softening and treatment plant. $250,000. Plans deposit $25. Paul A. Uhlmann & Assoc., 1441 N. High St., Columbus, engr.

About April 12

†W. Va., Parkersburg—U. S. Eng., Madison Ave. and 8 St. W., Huntington, Zone 18, constructing 34 St., WW, and power plant pump stations, local protection proj. CD 7/25—ENR 8/1.

April 27

W. Va., Clarksburg—Clarksburg Water Bd., Clarksburg, laying 20,000 lin. ft. 8 and 12 in. distr. mains. Alvord, Burdick & Howson, 1401 Civic Opera Bldg., Chicago, Ill., engrs.

May 3

Que., Beauceville East—Secy., c/o Municipality, WW sys. $272,000. G. Demers, 71 St. Peter St., Quebec City, engr. CD 1/9/48—ENR 1/22/48.

LOW BIDDERS

Ark., Forrest City—City, Forrest City, Feb. 24, water dist. sys. extens., from G. H. Young Constr. Co., Morrilton **$44,984.** CD 2/16.

Calif., Vallejo—City, City Hall, Mar. 2, water treatment plant on Fleming Hill, from O. R. Dams Constr. Co., Rt. 7, Box 1143, Sacramento, **$71,450.** CD 2/17—ENR 2/24.

Conn., Willimantic—City, R. F. Paulhus, city clk., City Hall, Feb. 28, constructing Contr. 1, existing water treatment plant and pumping station addns., alterations, and misc. appurtenances from Seminole Constr. Co., 24 Edison St., East Hartford, **$114,400.** CD 2/10—ENR 2/17.

Pa., Norristown—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, Mar. 2, mechanical and piping constr. for water supply sys. addns. at Norristown State Hospital from Corbits, Inc., 225 S. Front St., Reading, **$291,000.** Est. $400,000. CD 2/21—ENR 2/24.

Tex., Rockdale—City, Mar. 1, WW sys. expan., imprvs., mostly c. i. distr. lines, from City Constr. Co., 2411 Inwood Rd., Dallas, **$53,000,** est. $64,000; water well, supply, from Layne-Texas Co., 5402 Lindale St., Houston. Items 1 and 2, **$37,518.** CD 2/8—ENR 2/10.

Tex., Westover Hills (Fort Worth)—City, R. Garrett, mayor, Westover Hills, Feb. 24, two 400,000 gal. steel rein-con. ground storage reservoirs, from Parkersburg Rig & Reel Co., 632 Fort Worth Club Bldg., Fort Worth, **$78,000,** est. $100,000; drilling, developing 4 water supply wells, from Texas Water Wells, Inc., 951 McCarty St., Houston, **$66,000,** est. $70,000. CD 2/15—ENR 2/17.

CONTRACTS AWARDED

Ala., Demopolis—City, Demopolis, WW imprvs., to Harbet & Cargile, 2337 20 Ave. S., Birmingham, **$85,146.** Bids 3/3. CD 2/11—ENR 2/24.

Neb., Scottsbluff—City, Scottsbluff, WW imprvts. Own forces. **$59,000.** E. Y. Grupe, Scottsbluff, consult. engr.

N. M., Raton—City, City Hall, water treatment plant, incl. filter building, sand filters, office, laboratory to James B. Kenney, 3233 Osage St., Denver, Colo., **$200,000.** CD 4/22—ENR 5/13.

Okla., Oklahoma City—City, Municipal Bldg., 200 N. Walker St., 6, 8 and 12 in. c. i. watermains serving Nichols Country Club Heights to Lippert Bros. Constr. Co., 2500 N. Santa Fe St., **$47,900.** Est. $51,400. Awarded 3/2. CD 1/22/48—ENR 2/5/48.

S. C., Greenville—City, Pub. Wks. Comn., H. C. Beattie, chn. WW imprvts. to Leo Barber, Silver Springs, Md., Sec. 1, **$147,564;** Sec. 2, **$111,495.** Bids 3/1. CD 2/7—ENR 2/7.

Tex., Crockett—City, waterlines. Own forces. **$45,000.**

Utah, Provo—City, c/o I. G. Bench, recdr., installing 16,630 lin. ft. 20 and 24 in. steel pipe, appurtenances as part of supply to City's water sys. to Kloepfer Sand, Gravel & Constr. Co., Ogden, **$34,731.** Bids 2/23. CD 2/16.

SEWERS, WASTE DISPOSAL

BIDS ASKED

March 28

Ont., Scarborough—E. Knott, 1160 Kingston Rd., 14,315 ft. 8- to 30-in., 11,242 ft. 8- to 21-in., 13,671 ft. 8- to 24-in. storm and sanitary sewers, for Twp. of Scarborough, E. M. Baird, 1660 Kingston Rd., town engr., and Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, engrs.

March 31

Tex., Alvin—City, sewage disposal. $115,000. Garrett Eng. Co., 1806 Milam St., Houston, engr.

April 5

N. J., Middlesex—At office, Fred Martin, secy. Joint Meeting of City of Plainfield, North Plainfield Boro and Dunellen Boro, City Hall, Plainfield, imprv., enlarging joint sewage disposal plant, Contr. B. Plans deposit $20. Elson T. Killam, 140 Cedar St., New York, N. Y., consult. engr.; adv. ENR 3/10.

April 11

La. Bastrop—City, City Hall, sanitary sewer extens., pump. stations, etc. Plans deposit $15. Pan American Engineers, 1418 3 St., Alexandria, engrs. CD 10/6—ENR 10/28.

April 15

O., Columbus—City, Elmer A. Keller, Dir. Pub. Service, sewerage treatment, expans. of sludge digestion facilities. **$866,000.** Plans deposit $25. Paul A. Uhlmann & Assoc., 1441 N. High St., engrs. CD 11/19/45—ENR 11/29/45.

June 1

Tex., Houston—Dixon Packing Co., 4821 Calhoun Rd., waste treatment plant. $50,000. Lockwood & Andrews, Union Natl. Bank Bldg., engrs.

Tex., Houston—Port City Packing Co., Inc., 4905 Calhoun Rd., waste treatment plant. $60,000. Lockwood & Andrews, Union Natl. Bank Bldg., engrs.

LOW BIDDERS

Calif., Novato—Town, Mar. 1, lateral sewerage sys., from W. M. Shives, 5959 Venice Blvd., Los Angeles, **$149,750.** CD 2/14—ENR 2/17.

Conn., Bristol—City, Municipal Offices, City Hall, Feb. 24, force mains and appurtenances, Riverside Ave. and Broad St., from New Britain Trucking Co., 1146 East St., New Britain, **$248,914;** sewage pumping station, Broad St., from J. F. Kelly, 902 Chapel St., New Haven, **$94,665.** CD 1/20—ENR 2/3.

Ga., Atlanta—Fulton Co., Atlanta, Mar. 2, outfall sewers from Nichols Contr. Co., 563 Trabert Ave. N. W., **$272,436;** lateral sewers, from M. G. Aldridge, Macon, **$76,350.** CD 2/7—ENR 2/17.

Ill., Belleville—City, Carl Siegel, city clk., City Hall, 35,705 lin. ft. 8- to 48-in. vitr. clay and rein.-con. sewers, 1,550 lin. ft. 6- to 20-in. c. i. pipe sewers, 2 sewage lift stations and pumps for existing lift stations, appurtenances, Sections 1 to 11. Section 1 and Section 5, from Martin Bros., 7735 Sappington Ave., St. Louis, Zone 5, Mo., **$106,074;** and **$17,423** respectively, Sections 2, 3, 4, 6, 7, 8, 9, 10 and 11, from Hoeffken Bros., Inc., 222 W. B St., **$207,868.**

Mass., Taunton—City, Bd. Sewer Comrs., Taunton, Feb. 18, sewage disposal plant, Group 1, electrical work, from Hart Eng. Co., 190 S. Water St., Providence, R. I., **$147,854.** CD 1/25—ENR 1/27.

Tex., Port Arthur—City, drainage laterals and sewer main from East Texas Constr. Co., 165 4 St., Beaumont, **$71,208.** J. B. Converse & Co., Port Arthur, engr.

Tex., Rockdale—City, J. B. Newton, mayor, Mar. 1, sanitary sewerage sys. extens., imprvs., from City Constr. Co., 2411 Inwood Rd., Dallas, **$67,500.** Est. **$56,000.** CD 2/8—ENR 2/10.

CONTRACTS AWARDED

Miss., Lexington—City, City Hall, sanitary sewer imprvs., to Mathews & Whitfield Constr. Co., Tupelo, **$98,310.** Bids 3/1, awarded 3/3. CD 2/16.

Miss., Starkville—City, City Hall, imprv. sewage disposal sys., to Voltz Constr. Co., Ripley, Tenn., **$129,000.** CD 12/2—ENR 12/9, under LB.

Tex., Crockett—City, sanitary sewers. Own forces. **$85,000.**

Tex., San Benito—City, lift station, pressure mains, rehabilitation sewage disposal plant, Units 2 and 3, to Fitzgerald & Co., Donna, **$116,500** est. $125,000; sanitary sewer collection sys., extens., imprvs., to existing lines Unit 1, to Contractors Assoc. Inc., Port Lavaca, **$126,000** est $175,000. Bids 2/2. CD 1/5—ENR 1/20.

Simplifies Construction of 750-Foot Tower with Arc Welding

By J. B. McCormick, Welding Engineer
The Lincoln Electric Company • Los Angeles, California

Fig. 1. Alt welded steel, solid rod, 750-foot radio tower at Buena Park, California.

Fig. 2. Base construction for tower incorporates gusset plates fillet welded to solid steel bars with two-pass welds.

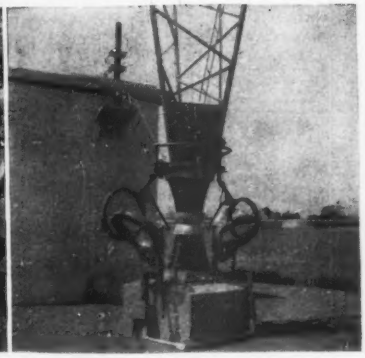


Fig. 3. Bottom section of 104,740-pound radio tower shows arc welded base design and ceramic insulator.

GREATER strength and less wind resistance through the use of solid round steel rod construction are achieved in the construction of the 750-foot radio tower for Station FKI at Buena Park, California. Replacing an old 400-foot T-type radio tower of riveted design, this radio tower, highest west of the Rockies, has been erected faster and at less cost with arc welding than would have been possible with other methods.

Unique in its construction, this tower (Fig. 1) is made up of thirty-seven 20′ triangular sections bolted together during erection. The base (Fig. 2) is a 24″ diameter 1½″ plate to which 4″ round solid rods are fillet welded. Gusset plates, flame cut from steel sheet, are fillet welded to the bars and the base for added strength. A special insulated pin connection (Fig. 3) is bolted to the base plate.

The twenty-foot triangular sections are weld-fabricated from 4″ solid bar members cross braced with 1⅜″ solid round bars. Steel flanges are first fillet welded to the 4″ vertical solid bars. The welding is done on a rotary fixture allowing downhand welding with two passes. The first pass is made with ¼″ "Fleetweld 7" and the second pass with "Fleetweld 11," using 400 amp. motor driven Lincoln "Shield-Arc" DC welders. While the fillet welds are being made as shown in Fig. 4, a second welder on a scaffold makes an inside weld on the flange at the opposite end of the 20′ bar eliminating the need for repositioning or turning the bars about.

The triangular section is tack welded first in a simple clamp fixture and then moved to a trunnion-mounted positioning jig (Fig. 5) to permit down-hand welding wherever possible. With this setup, two welders complete two and a half sections in eight hours. International Derrick and Equipment Co. of Torrance are the fabricators, and Skyway Construction Co. of La Habra, California, are the erectors.

***Fig. 4.** Fillet welding steel flange to solid steel rod for upright members of section.*

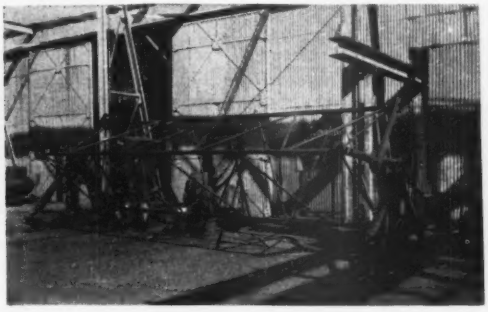


Fig. 5. Finish down-hand welding of 20-foot section in positioning jig.

The above is published by **THE LINCOLN ELECTRIC COMPANY** *in the interests of progress.*
Architects and engineers are invited to write on their letterheads to be placed on mailing list for Structural Welding Studies.
The Lincoln Electric Company, Dept. 133, Cleveland 1, Ohio. (ADVERTISEMENT)

BRIDGES

LOW BIDDERS

Calif., San Leandro—City, City Hall, Feb. 28, concrete rigid frame bridge over San Leandro Creek at Bancroft Ave., from Stanley W. Taylor, 1201 Fulton St., San Francisco, **$84,343.** CD 2/15—ENR 2/17.

Maryland—State Hy. Dpt., Baltimore, Mar. 8, superstructure Chesapeake Bay Bridge, Queen Anne and Anne Arundel Counties, from Bethlehem Steel Co., Mercantile Trust Bldg., Baltimore, **$16,854,104.** CD 2/16—ENR 2/24.

Wisconsin—State Hy. Comn., Madison, Mar. 1, Oconto River Bridge, approaches 0.05 mi. Abrams-Stiles Rd., U. S. Hy. 141, Contr. 1, Proj. T 040-1 (5), Oconto Co., from Donaldson Bros. Constr. Co., Menomonie, **$49,623.** CD 2/11—ENR 2/17.

CONTRACTS AWARDED

Ont., Toronto—Municipality, bridge, Huntley St., to George Hardy Ltd., 163 Wickstead Rd., Leaside, **$341,721.** CD 11/30—ENR 12/2. Bids 11/23.

STREETS AND ROADS

LOW BIDDERS

Maryland—State Hy. Dpt., Baltimore, Mar. 1, bit. 3.47 mi. Spec. B along Uhl Hy., State Rt. 51, Contr. A 405-1-615, Allegany Co., from Keeley Constr. Co., Clarksburg, W. Va., **$205,390** ***b. conc. 9.1 mi. Spec. B., U. S. Rt. 50, Contr. G. 227-1-615, Garrett Co., from Cumberland Contg. Co., Cumberland. **$100,064*****c. conc. 0.528 mi., section State Rt. 404, Contr. T 125-1-215, Talbot Co., from George & Lynch, 18 and Broom Sts., Wilmington, Del., **$104,326.** CD 2/24.

Mo., Kansas City—City, c/o J. V. Lewis, supt. Parks, City Hall, paving, curbing Riverside Dr. and Boathouse Rd., Swope Park, from Midwest Pre-Cote Co., 7600 E. 17 St., **$62,401.** CD 5/27/43.

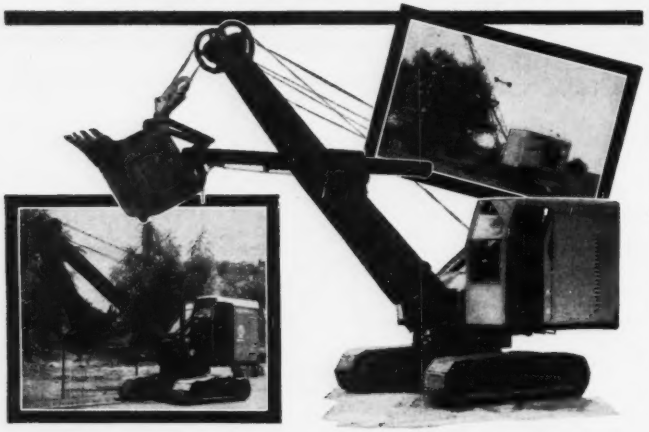
CONTRACTS AWARDED

Neb., Omaha—Douglas Co., Omaha, paving county mail route roads, to Yant Constr. Co., 917 N. 45 St., **$74,319.** Bids 2/21.

Man., Winnipeg—Municipality, concrete paving various roads, day labor, **$255,485.** CD 4/24/47—ENR 5/15/47.

Ont., Brantford—Brant Co., Brantford, road reconstruction, day labor, **$68,000.** R. Lee, co. engr. CD 3/3/47—ENR 3/20/47.

A PIONEER
of Small Excavating Equipment
...AND STILL A LEADER!



GENERAL **SHOVELS, DRAGLINES, CRANES, ETC.**
Diesel, Gas, and Electric Powered . . . Wheel and Crawler Mounted. ½ and ¾ Cu. Yds.

Generals have always been known for speed . . . for strength and power . . . for flexibility . . . for the ability to take punishment day after day and still give uninterrupted performance. Constant improvement of the product through new engineering developments, has added to that reputation.

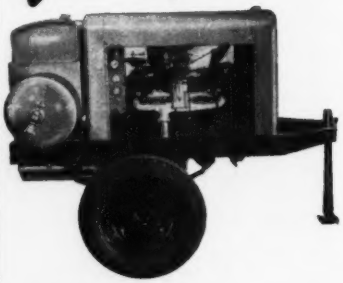
A typical General achievement is the self-propelled one-man, one-engine crane, on rubber. Similarly, the new General crawler-mounted shovels, cranes and draglines, etc., are making an enviable record of out-performing all other types of equipment of comparable rating. Write today for the latest details.

POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS

THE OSGOOD CO. O-G THE GENERAL CO. EXCAVATOR
MARION OHIO

DIESEL, GASOLINE OR ELECTRIC POWERED • ⅛ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

Here's the COMPRESSOR for you!



NEW!

. . A new SMITH Compressor with more capacity, smooth operation, economy . . long life!

Powered with a famous CHRYSLER Industrial Engine—3 cylinders for power—3 for compression. Evenly spaced power impulses. Capacity 70 cu. ft. at 80 lbs. pressure. Throttle operates about ⅓ open when operating at 150 lbs. pressure. Built for heavy duty without excess bulk and weight. Engine parts available at Chrysler, DeSoto, Dodge truck dealers.

Write for complete facts about the SMITH Model 250!

***Smith* AIR COMPRESSORS**

GORDON SMITH & CO.
430 College St. Bowling Green, Ky.

EARTHWORK, WATERWAYS

BIDS ASKED

March 22

†Colorado — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, approx. 3,000 bbl. portland cement in paper sacks for constr. diversion works and Fire Mountain Canal, Pavnia Proj., Spec. 2597. L. N. McClellan, c/o owner, ch. engr.

March 25

Minn., St. Peter — Nicollet Co. H. Overn, aud., St. Peter, 570,987 cu. yd. excavation, 2 creosoted timber bridge, 1,080 lin. ft. 15- to 72 in. sectional concrete or corrugated metal culverts, County Ditch No. 30, $102,547. CD 8/31—ENR 9/2, under LB.

March 31

†Iowa—U. S. Eng., 1709 Jackson St., Omaha, Neb., levees, appurtenances, Unit II, near Council Bluffs, incl. Schedule A, 195,000 cu. yd., embankment, 100 lin. ft. 60 in. CMP, one rein.-con. outlet structure, 86 acres, clearing, and grubbing 16 acres seeding, Schedule B, 1,987,000 cu. yd. unclassified excav., 100 lin. ft. 30-CMP, 1 rein.-con. outlet structure, 67 acre seeding; Schedule C, incl. Schedules A and B. Serial No. Eng. 25-066-49-137. Extended date. CD 2/25.

April 5

†California—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Herdlyn, Calif., materials for power cable trays, motor floor elevation 38.63 and control cable trays, cable galley-elevation 23.63 in Tracy Pumping Plant and materials for control cable duct, incl. structural steel, floor grating, louvers insulated panels, steel roof deck, gravel stops, metal flashing sill angles, bearings, appurtenant parts, bolts, and fastenings for Tracy Pumping plant, Central Valley Proj., Spec. 2593. L. N. McClellan, ch. engr.

†Oregon-California — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point, or f.o.b. cars Tule Lake, Calif., five 36 in. diam. flap gates for Pumping Plant D, Modoc Unit, Klamath Proj., Spec. 2592.

†Oregon — Bureau Reclamation, Dpt. Interior, Bldg 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point, or f.o.b. cars Prineville, one 44 in. diam. welded-plate-steel pipe with support rings, rings, manholes, flange, couplings, drains and accessories for repair of outlet works at Ochoco Dam, Deschutes Proj., Spec. 2590.

April 6

†Montana—Bureau Reclamation, Dpt. Interior, Old High School Bldg., North Warren St., Helena, Canyou Ferry Dam, Power Plant, Canyon Ferry Unit, Missouri River Basin Proj., on Missouri River, 16 mi. northeast of Helena, Spec. 2585. CD 9/5/45—ENR 9/13/45.

April 7

†Nebraska-Kansas — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Guide Rock, Neb., six 5x10 ft. top seal radial gates with pin bearings; 10 in. wall plates, gate sills, bottom plates, top and bottom bars; two 12x20 ft. radial gates with 5 in. diam. rollers, pin bearings, 10 in. wall plates and gate sills; six 5,000 lb. and two 10,000 lb. motor-operated radial-gate hoists for Superior-Courtland Diversion Dam, Bostwick Unit, Spec. 2595.

April 12

†Colorado — Bureau Reclamation, Dpt. Interior, Monte Vista, constr. Platoro Dam on Conejos River about 1 mi. upstream from Platoro, San Luis Valley Proj., Spec. 2594. L. N. McClellan, Bldg. 1A, Denever Federal Center, Denver, ch. engr.

About April 15

†West Virginia—U. S. Eng., Madison Ave. and 8th. St. W. Huntington, furnishing, del. crest gates, incl. frames and operating machinery, trash chute gate and bulkheads for the Bluestone Dam, Bluestone Reservoir Proj. New River.

LOW BIDDERS

†California — U. S. Eng., 1209 Eighth St., Sacramento, Mar. 1, levee construction on North and South Levees of Deer Creek, Tehama Co., Serial No. Eng-04-167-48-58, Spec. 1333, from N. M. Ball & Sons, Box 430, Berkeley, **$212,811.** CD 2/9—ENR 2/17.

Mass., Boston — Commonweath of Mass., Metropolitan District Commr., 20 Somerset St., Mar. 3, repairs, large boat lock and gates, Charles River Reservation, Charles River Dam, from Marinucci Bros. & Co., 51 Ceylon St., Dorchester, **$38,295.**

†Mass., West Springfield — U. S. Eng., Army Base, Boston, Zone 10, Mar. 3, Riverdale Dike and Wayside and Riverdale Pumping stations, West Springfield, Serial No. Eng., 19-016-49-35. from Daniel O'Connells Sons, Inc., 480 Hampden St., Holyoke, **$783,067.** CD 1/24—ENR 2/3.

NEW Concrete Vibrator Head
Lasts Twice as Long!

Internal parts lubricated with oil, not grease, for cooler operation . . . better all-weather efficiency . . . longer life.

STOW's

Model 250 Vibrator Head gives you twice as much service . . . cuts your repair bills in half . . . because of these *extra* features:

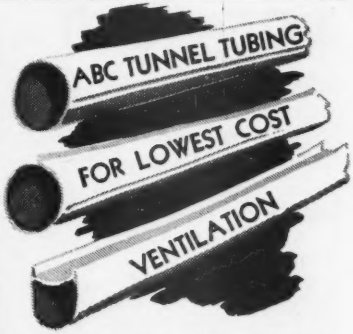
1 — Special hydraulic seal protects housing against oil leakage . . . keeps abrasive cement dust out.

2 — New type high speed shaft seal completely eliminates shaft wear and scoring.

3 — Eccentric weight mounted in super-precision ball and roller bearings to counteract radial and thrust loads.

Get ALL the facts on STOW Vibrators. Send today for your free pamphlet describing latest models.

STOW Manufacturing Co., 19 Shear St., Binghamton, N. Y.



Cut costs in moving big quantities of fresh air to where the men need it. It's as easy as ABC Tunnel Tubing — the lower cost, easier installed, longer serving tubing for tunnel ventilation. Leak-proof, flame-proof, fungi-proof. Sizes 8" to 36" — Readily cut to length on the job; snap-on couplings. Made by the manufacturer of ABC Concrete Highway Curing Mats, Mine-Vent Powder Bags, and Black Ace Construction Cloth for temporary closures. Write for data.

ABC AMERICAN BRATTICE CLOTH CORP.

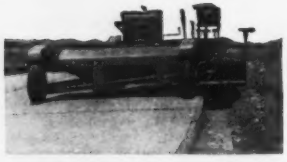
240 Buffalo St. Warsaw, Ind.

1949 CONDITIONS
demand
MONEY-SAVING EQUIPMENT

. . . get set with this

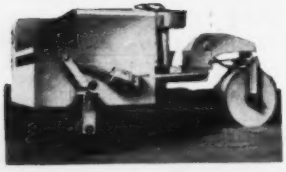
APSCO BASE PAVER

This paver answers a long felt need in the road building field. Can be operated by a two-man crew . . . handles up to 150 tons per hour . . . lays 8' to 12' width . . . up to 12" thick . . . has oscillating screed, dual steering and hydraulic brakes . . . Forms are not required—changing width or depth is simple, fast . . . high speed reverse . . . easily loaded on carry-all.



ROAD WIDENER

Run by two-man crew — powerfully built—handles any aggregate to 6" in 2' to 8' strips.



TRENCH ROLLER

Ideal companion piece for widener —has pneumatic tired leveling wheel —maneuverable.

THE ALL-PURPOSE SPREADER CO.
FULLER ROAD . . . ELYRIA, OHIO

†**Nebraska** — U. S. Eng., 1709 Jackson St., Omaha, Mar. 3, agricultural levee along right bank of Missouri River, Eng-25-066-49-179, from Luhr Bros., Columbia, Ill., **$377,898.** Est. $402,369. CD 2/9—ENR 2/17.

†**New Jersey** — U. S. Eng., 120 Wall St., New York 5, N. Y., Mar. 8, maintenance dredging Passaic River, near Harrison from Arundel Corp. Ft. Fulton St., Brooklyn, **$313,089.** Est. $252,576. CD 3/2.

●†**Washington** — Bureau Reclamation, Dpt. Interior, Coulee Dam, Mar. 1, earthwork, concrete lining and structures for West Canal, Station 351 plus 71.86 to 381 plus 84.70 and 511 plus 35 S.L. to 1229 plus 74, Spec. 2541, Columbia Basin Proj. from Morrison-Knudsen Co. Inc., Hoge Bldg., Seattle, **$6,136,234.** CD 1/25—ENR 1/27.

CONTRACTS AWARDED

●†**California** — Bureau Reclamation, Dpt. Interior, Coachella, earthwork, pipelines, structures, laterals 119.64 to 123.4 sublaterals Unit 6, Coachella Valley Distr. Sys., All-American Canal Sys., Boulder Canyon Proj., Spec. 2488, to American Pipe and Constr. Co., P. O. Box 3428, Terminal Annex, Los Angeles 54, Calif., **$2,049,922.** Bids 1/4, awarded 3/3. CD 1/11—ENR 1/13, under LB.

†**California** — Bureau Reclamation, Dpt., Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., radial gates for Friant Kern Canal Station 3765 plus 75.00, 3876 plus 50.67 and 4410 plus 00, Central Valley Proj., Spec. 2496, to Berkeley Steel Constr. Co., Inc., 2 and Camelia Sts., Berkeley, **$29,980.** Bids 1/11, awarded 3/3. CD 12/15—ENR 12/30.

Conn., Old Saybrook — Ernest M. Hull, Old Saybrook, T-shaped 450 ft. long pier, 50 ft. finger pier providing berths for boats, dredging to depth of 6 ft. at low water, own forces, **$50,000.**

†**Louisiana**—U. S. Eng., foot Prytania St., New Orleans Zone 9, 110,000 cu. yd. uncompacted earthwork, drainage structures, etc., Atchafalaya Basin Protection Levees, Serial No. Eng., 16-047-49-219, to Modern Constr. Co., P. O. Box 1732, Baton Rouge, **$44,313.** Bids 2/11, awarded 2/15. CD 2/2.

†**Nebraska** — Bureau Reclamation, Dpt. Interior, Superior, constructing Superior-Courtland diversion dam and earthwork and structures for Superior Canal, Station 1 plus 74 to 10 plus 00, Spec. 2495, Missouri River Basin Proj., Bostwick Unit to Knisely-Moore Co., Douglas, Wyo., **$866,263.** Bids 1/20. CD 1/25—ENR 1/27, under LB.

Tex., Fannett (Beaumont P. O.) — Coastal Soil Conservation Dist., c/o G. Clubb, R. F. D. 2, Box 230, Fannett, via Beaumont, terracing, grading, earthen tanks, revetments, drainage. Own forces. **$90,000.** CD 8/19/48—ENR 9/2/48.

Tex., Wink — Wink Independent School Dist., Wink, school grounds imprv., grading, levelling, drainage, steel stadium, to Subble-Beld Constr. Co., P. O. Box 590 Pecos **Tex.** and Central Texas Iron Works, Abilene, **$59,580.** Buford & Feinberg, 1801 San Jacinto St., Dallas, engrs.

AIRPORTS AND AIRBASES

BIDS ASKED

April 14

†**Va., Gravelly Point**—TERMINAL BLDG.—Pub. Bldgs. Admin., Federal Works Agency Bldg., Wash., D. C., South Exten. to Terminal Bldg. at Washington National Airport Proj. No. 44-094-5. CD 3/4.

PUBLIC BUILDINGS

BIDS ASKED

March 21

†**N. J., Bordentown**—U. S. Eng., Armory Dr., Trenton, motor vehicle storage. **$60,000.**

†**N. J., Pitman**—U. S. Eng., Armory Dr., Trenton, motor vehicle storage. **$60,000.**

March 22

●**N. Y., Troy**—Bd. Contract & Supply, City Hall, high school. Extended date. Frank J. Morgan, 253 Broadway, archt. CD 2/24—ENR 3/3.

○**N. Y., Troy**—Municipal Housing Auth., City Hall, housing proj. Plans deposit **$25.** Extended date. J. Fletcher Lankton & John W. Ziegle Assoc., 1100 Main St., Peoria, Ill., archts. CD 2/24—ENR 3/3.

March 23

Que., Ste Agathe De Monts—MacDougall, Smith & Fleming, archts., 1235 McGill College Ave., Montreal, school and gymnasium. Approx. $300,000. CD 2/17—ENR 4/1.

March 24

Tex., Houston—Houston Independent School Dist., 1600 Washington St., 16 story, masonry Harris School, concrete slab fdn. and frame, rehabilitation of existing 2 room school; boiler room. $300,000. Herbert W. Voelcker & Assoc., 2801 San Jacinto St., archts. Stayton Nunn, 2017 W. Gray St., co-ordinating archt. CD 2/4—ENR 2/13.

March 25

†**Fla., Jacksonville**—U. S. Eng., P. O. Box 4970, Navy Bulk petroleum fuel terminal, Inv. No. Eng-08-123-49-74.

JOBS MOVE ON SCHEDULE

with CP construction equipment

The well-earned reputation for fuel-economy of CP PORTABLE COMPRESSORS owes much to the CP gradual speed regulator, that adjusts engine speed exactly to air demands. This, with other special CP features, effects fuel savings of 15% to 35%.

Gasoline-driven portables range from 60 to 315 c.f.m. actual capacity; Diesel-driven, from 105 to 500 c.f.m., the latter model being shown in action.

New HI-SPEED UNIVERSAL ELECTRIC SAWS are rugged all-purpose power saws; 7½", 8¼" and 9" sizes. Heavy duty motors, helical gears. Write for Bulletin SP-3000.

Providing fast and easy operation of the more powerful CP drifter drills, the lightweight G-200R WAGON DRILL reduces drilling costs, drills holes at any angle, is easily moved over uneven ground. Available with CP-50N (3"), CP-60N (3½"), or CP-70 (4") Drifters.

Seven different models in the complete line of CP Pneumatic and High Frequency Electric VIBRATORS enable the contractor to select just the type and size for a specific job.

CHICAGO PNEUMATIC TOOL COMPANY

General Offices: 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

Man., Brandon—Hon. E. F. Willis, c/o Dpt. P. Wks., Winnipeg, hospital for mental diseases, G. Parfitt, Legislative Bldg., Winnipeg, archt., CD 4/15/46.

March 29

Calif., Mendocino—State Div. Architecture, P. Wks. Bldg., Sacramento, 3 ward bldgs., and combination kitchen, commissary and bakery with combined floor area of approx. 150,000 sq. ft. at Mendocino State Hospital. Plans deposit $25. Anson Boyd, state archt.

Ga., Camp Gordon (P. I. Augusta)—U. S. Eng., Post Office Bldg., Savannah, rehabilitation of bldgs. facilities, Station Hospital, Serial No. Eng-09-133-47-79. Extended date. CD 2/1—ENR 2/3.

Minn., Breckenridge—Bd. Educ., J. Vertin, Jr., clk., 2 story, brick, stone school addns. and alterations, $375,000. Plans deposit $20. F. W. Jackson, St. Cloud, archt. CD 3/28/46—ENR 4/5/46.

Minn., St. Paul—University of Minnesota, R. S. Callaway, purch. agt., 223 Administration Bldg., Main Campus, 1 story, rein.-con. brick animal and poultry husbandry Bldg., $480,000. Plans deposit $25. C. H. Johnston, 715 Empire Bank Bldg., archt. CD 8/8/47—ENR 8/21/47.

N. Y., Dongan Hills—New York City Housing Auth., 67 Park Row, New York, Zone 7, general constr.; heating and ventilating; electrical and plumbing for General Charles W. Berry Houses, Proj. NYC-18, located in area bounded by Richmond Rd. Dongan Hills Ave., Staten Island Ry. and proposed street (Seaver Ave.) 200 ft. north of and parallel with Stobe Ave. Plans deposit $75. Elevators. Plans deposit $25. CD 12/15.

March 31

†**Kansas**—Bureau Reclamation, Dpt. Interior, Ellis, remodeling garage and storage, Ellis, Govt. Field Office and laboratory bldg., Cedar Bluff Damsite, Cedar Bluff Unit, Smoky Hill Div., Missouri River Basin Proj., Spec. 7-54 (Region 7). L. N. McClellan, ch. engr.

April 1

Minn., Minneapolis—University of Minnesota, R. S. Callaway, purch. agt., 223 Administration Bldg., Main Campus, 4 story, brick, rein.-con., health service bldg., $600,000. Plans deposit $15. Magney, Tusler & Setter, 202 Foshay Tower archts.

†**Washington**—U. S. Eng., 19 E. Poplar St., Walla Walla, design, manufacture and install three 104,000 hp. hydraulic turbines, incl. embedded parts, appurtenances, and pier nosings for 4 units for Ice Harbor Dam power plant. Extended date. CD 12/21—ENR 12/30.

IMPROVED

VOLUTE MIXED FLOW PUMPS

Economy redesigned for

MAXIMUM EFFICIENCY
SMALLER MOTORS . . .

If you're pumping solids . . . not large enough to require regular non-clog slow speed sewage pumps . . . you'll find Economy volute mixed flow pumps the answer to your problem. Engineered for greater economy in operation, the Economy mixed flow volute line, tested and proved in twenty-two years of operation, has now been redesigned for still higher efficiency.

Built to keep pumping longer at lower cost these pumps are equipped with the highest duty bearings available, including double row, angular contact thrust bearing. Large size pumps also have a self-aligning, spherical roller radial bearing.

Capacities range from 3,000 to 50,000 G.P.M., heads from 10 to 50 ft. For complete details, write Dept. CB-3.

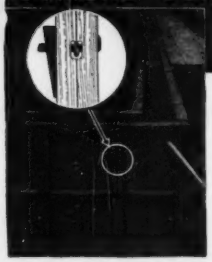
Centrifugal, axial and mixed flow pumps for all applications.

Economy Pumps Inc.

Division of Hamilton-Thomas Corp.

Hamilton, Ohio

SYMONS CONCRETE FORMS



Your answer to low foundation costs

Here's Why!

Symons Concrete forms save you 50 to 75% of the entire labor of forming. You eliminate eleven costly steps in concrete form construction, and the following materials:

- √ Nails
- √ Lumber for more than one waler
- √ Most of the lumber for bracing
- √ Loss of lumber caused by the splitting action of nails
- √ Spreaders

These forms can be built in your own shop . . . saving you freight . . . or you may purchase the forms complete.

Inset shows head on view of tie.

At left is cross section view of tie.

SAFETY SHORES and "Ever-Square" COLUMN CLAMPS

. . . . the builders choice

"EVER-SQUARE" COLUMN CLAMPS . . . with one piece, 90 degree angle bracket which positively squares up column. Adjustable to smallest fraction. No detachable parts. Bars of alloy steel, corner brackets of malleable iron.

ADJUSTABLE SAFETY SHORES . . . Light in weight, easy to adjust, no instructions are needed and they have greater load capacity. The lifting jack lifts like hydraulic. Malleable castings.

Symons Concrete Forms, Safety Shores and Column Clamps can be rented with 90-day purchase option. Paid rentals apply on purchase price. Write today for complete details and prices

SYMONS CLAMP & MFG. Company

4265 W. Diversey Ave.
CHICAGO 39, ILLINOIS

LOW BIDDERS

†Arizona and Nevada—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Mar. 1, five 2,000 amp bus structures with current and potentials transformers, disconnecting grounding switches, capacitors and lightning arresters for unit 1 through 5, five 75½ kva transformers, and five 85 kw resistors for Davis Dam Power Plant, Kingman, Davis Dam proj., Spec. 2528, Schedule 1, from I-T-E Circuit Breaker Co., 19 and Hamilton Sts., Phila., Pa., **$90,807.** CD 2/18.

Calif., Clovis—Clovis Union High School Dist., Clovis, Feb. 25, rein.-con. school auditorium, from Dahs Co., 362 Thorne St., Fresno, **$280,286.** CD 2/2—ENR 2/10.

Conn., Plainville—Town, Supt. of Schools, 74 East St., brick steel school addn., Linden St., from Wadhams & May Co., 15 Lewis St., Hartford, **$467,478.** CD 2/2—ENR 2/10.

Me., Portland—City Purch. Agt., City Hall, Deering Oaks Junior High School, Deering and Park Aves., from T. W. Cunningham Inc., 38 Columbia St., Bangor, **$827,700.** J. H. and J. C. Stevens, 187 Middle St., archt. CD 1/30/46—ENR 5/16/46.

Mass., Boston—City of Boston Housing Auth., 10 Post Office Sq., Mar. 4, 48 unit veterans housing proj., Victory Rd., and Adams St., Dorchester, from St. Paul Constr. Co., 602 Boylston St., **$495,397.** Arthur Goldberg, 739 Boylston St., structural engr., CD 2/16—ENR 2/24.

Mass., Norwell—Town, Bldg. Comn., Selectmens Office, Town Hall, Feb. 25, school, from Park Constr. Co. Inc., 40 Court St., Boston, **$318,700.** CD 2/14—ENR 2/17.

●**Mass., Somerville**—City Housing Authority, C. G. Martignette, 24 North St., chn., Mar. 3, veterans housing proj., Clarendon Hill, corner of North St., Fowder House Blvd., Alewife Brook Parkway, from G. L. Ruco & Sons, Inc., 80 Boylston St., Boston, **$1,631,711.** M. A. Dyer Co., 8 Beacon St., Boston, archt., CD 2/7—ENR 2/17.

N. J., Pennsville—Lower Penns Neck Twp. Bd. Educ., Pennsville, Mar. 3, school from John McShain, 832 Prospect St., Trenton, **$664,820.** CD 2/25.

Pa., Uniontown — Bd. Educ., North Union Twp., Union town, rejected bids Feb. 21, 2 story bsmnt., 128x138 ft. brick, high school addn., concrete slab, steel joist roof constr., Coolspring St. Est. **$300,000.** CD 1/27—ENR 2/3.

CONTRACTS AWARDED

Calif., El Monte — El Monte Union High School Dist., El Monte, two, 75x200 ft. frame stucco Rosemead High School classroom bldgs., to R. H. Parr & Son, 4909 Exposition Blvd., Los Angeles, **$349,887.** Bids 2/28.

N. Y., Jamestown—Bd. Pub. Utilities, City Hall, foundation work for Municipal Light and Power Plant to L. H. Ludwig & Co., 20 W. Main St., Falconer, **$259,835.** Bids 2/1. CD 1/10—ENR 1/27.

Pa., Woodville—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, general constr., remodeling female mental bldgs., Wards 1 to 8, inclusive at Woodville State Hospital to Allegheny Building & Supply Co., 899 Bingham St., Pittsburgh Zone 3, **$576,800.** Est. $520,000. Bids 2/2. Awarded 3/3. CD 2/8—ENR 2/17. under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

March 19

Ont., Smooth Rock Falls — C. B. Dolphin, archt., 415 Eastern Ave. Toronto, 50x174 ft. concrete, stone, brick hospital, for owner, $250,000.

March 29

Ala., Mobile—Brothers of Sacred Heart, c/o William R. Burk, archt., Pan American Bldg., New Orleans, La., 3 story church. CD 9/21—ENR 10/21.

About April 1

Pa., Doylestown — Our Lady of Mt. Carmel R. C. Church, E. State St., plans by Thomas Henry Moran, Hillcrest Estates, Princeton, N. J., school. $250,000.

April 4

N. J., Cape May Courthouse — Burdette J. Tomlin Memorial Hospital Fdn., Cape May Courthouse, hospital, $700,000. Raymond R. Chatfield, 324 W. Chelten Ave., Phila., Pa., archt. CD 6/14—ENR 6/17.

April 11

Calif., Patterson — Patterson Community Hospital, S. 8 St., 26 bed frame hospital, $350,000. Plans deposit $100. Douglas Stone & Louis B. Mulloy, 619 California St., San Francisco, archts. CD 3/10/48—ENR 4/1/48.

June or July

Mo., St. Louis—Josephine Heitkamp Memorial Hospital, 1640 S. Grand Blvd., Zone 4, 3 story, brick, concrete, steel hospital, Grand Blvd. and Lafayette Ave., Maguolo & Quick, 4908 Delmar Blvd., Zone 8, archts. CD 4/24/46—ENR 5/9/46, under Mo., Affton.

SOON LETS CONTRACT

Fla., Leesburg — First Baptist Church, Leesburg, soon lets contract church addn. $250,000. Arthur L. Williams, 1483½ S. Beach St., archt.

JACKSON

SIDE FORM VIBRATOR

FOR CONCRETE PAVING

SAVES BETTER PART OF 2 MEN'S LABOR

This machine, which may be mounted on any modern finisher, Jackson Vibratory Paving Tube or spreader, employs two vibratory units that are simultaneously lowered into or raised from the concrete through controls on the deck of the finisher or spreader by the regular operator. It eliminates manual vibrating of concrete at the side forms.

INSURES A BETTER JOB . . . . . .

Vibrators operate well ahead of front screed of any finisher, will operate close to forms or reinforcement without fouling, will ride over any obstruction encountered and will NOT penetrate through the concrete into the sub-base. Thorough compaction is assured regardless of speed of finisher or spreader. In reverse travel, vibrators may be elevated or left in concrete without damage to concrete or equipment. NO SPOTS WILL BE MISSED WHERE THIS MACHINE IS USED.

RUGGED—TROUBLE-FREE . . . . . .

Vibrators are electric vibratory motors in which the vibratory medium is an integral part of the motor. Vibration is transmitted to a simple loop of steel tubing bolted to the lower end of the motor. Thus all flexible shafts or long rigid shafts, which can be a major source of trouble, have been eliminated. Motors are exceptionally rugged, having been proved in more than 25 years of severe service. Power is supplied by reliable Jackson Power Plant on the finisher or spreader deck.

Nothing approaching the efficiency of this machine has ever before been offered for this purpose. Write for the complete facts, NOW!

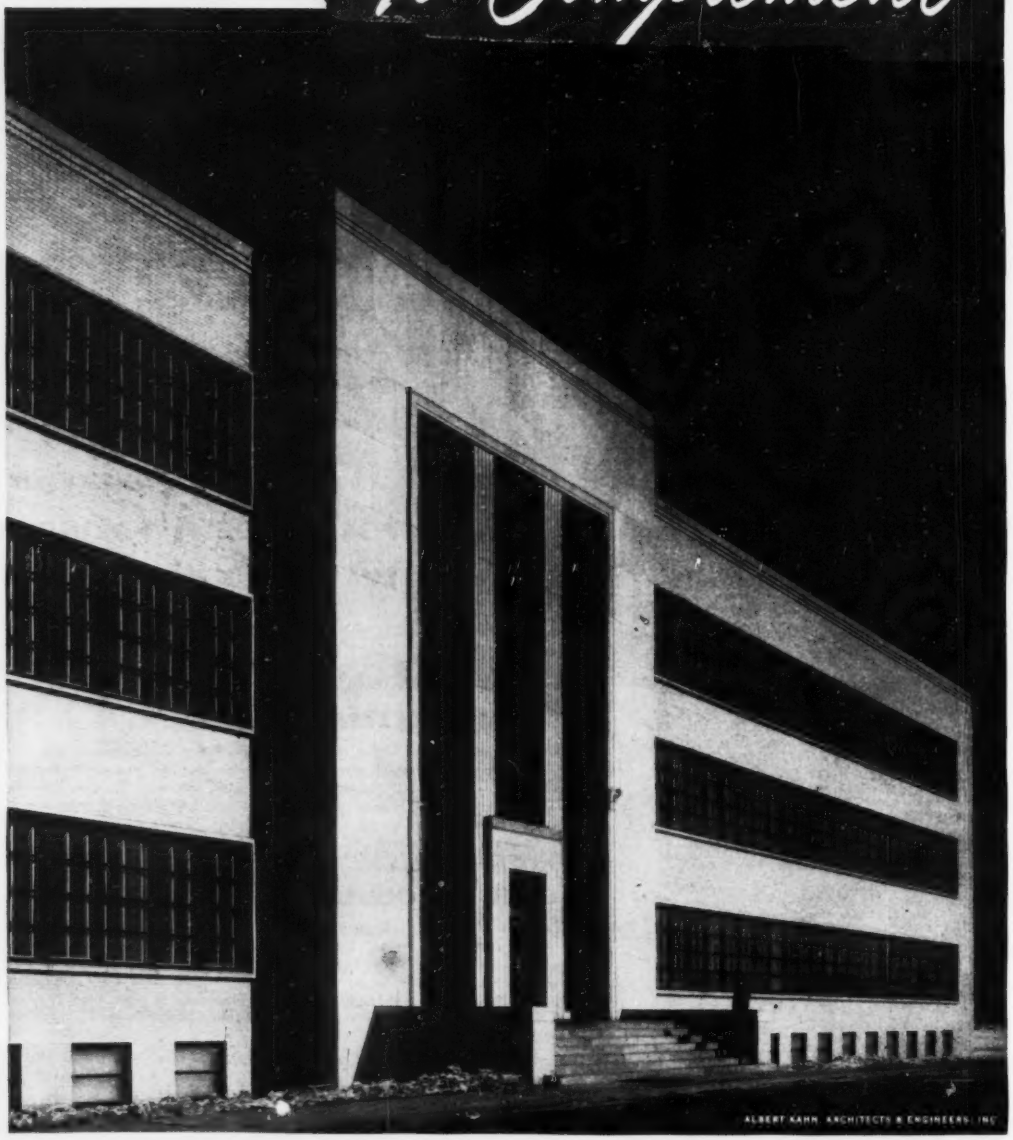
OTHER MONEY-MAKING PAVING EQUIPMENT

Jackson Vibratory Paving Tubes for vibrating full slab-widths of highway and airport paving; Jackson Municipal Paving Unit (manually guided electric vibratory screed and power plant); Vibrators for every type of paving and construction.

Manufactured by ELECTRIC TAMPER & EQUIPMENT CO. for

JACKSON VIBRATORS, INC., LUDINGTON, MICH.

To Complement



In construction products **CECO ENGINEERING**

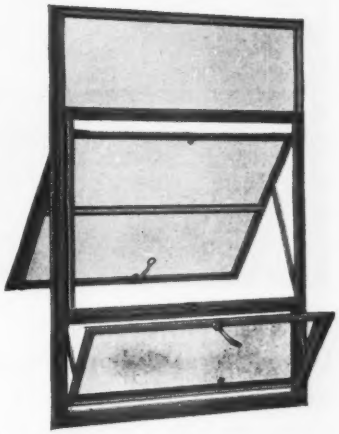
a Monument...

CECO Architectural Projected Windows

In keeping with architectural design, monumental buildings need windows that complement their structural magnificence . . . windows designed architecturally with an eye to good appearance. Ceco's Architectural Projected Window is just such a window. From every angle, here is outstanding beauty . . . complete utility. In Ceco's Architectural Projected Window, the sections are designed for maximum strength—the arrangement of glass lights makes for maximum beauty. Consider these features:

1. The frame section is 1⅜″ deep. The ventilator section is 1½″ deep. The extra ⅛″ added to the ventilator depth provides the strength so necessary for proper window performance.
2. The frame and ventilators are welded at all four corners.
3. Standard hardware is solid bronze.
4. Easy to screen . . . a great convenience in public buildings, schools, and commercial and industrial buildings.

Yes, from every angle, here's a handsome window with every utility. So, specify Ceco Architectural Projected Windows, for no matter what the architectural design, Ceco has the right window for you.



Ceco Architectural Windows are constructed of hot rolled sections, bonderized and especially designed to provide rigidity and good weathering performance. Suitable for public, commercial and industrial buildings . . . designed to provide weather protection when open . . . adaptable to screening with Ceco standard screens, since each ventilating sash projects on only one side of window.

CECO STEEL PRODUCTS CORPORATION
General Offices: 5601 West 26th Street, Chicago 50, Illinois
Offices, warehouses and fabricating plants in principal cities

CECO STEEL®

makes the big difference

Partial List of Ceco Products

METAL RESIDENCE CASEMENTS • INDUSTRIAL WINDOWS AND DOORS • METAL FRAME SCREENS • ALUMINUM FRAME STORM WINDOWS • ALUMINUM COMBINATION STORM WINDOW AND SCREEN UNITS • METAL LATH AND ACCESSORIES • STEELFORMS • REINFORCING BARS STEEL JOISTS AND ROOF DECK • HIGHWAY PRODUCTS

HERE'S Capacity TO SERVE YOU IN VITRIFIED CLAY PIPE

Universal Vitrified is quality-production minded. Plant 1 has an immense production in full range from 4" to 36" in both standard and extra strength. Plants 2 and 5 have large capacities in sizes used by building supply dealers—4" to 24". Plant 3 specializes in the volume manufacture of Vitrified Clay Liner Plates, Vitrified and Concrete Sewer Pipe, Ship-Lap Wall Coping, and Aerodrane Filter Block.

in CONCRETE PIPE

Plants 4, 6 and 7 manufacture concrete pipe both machine and cast in immense quantities and high quality in all sizes from 6" to 120". Universal Vitrified and United States Concrete are in a position to advise without bias between Vitrified Clay and Concrete Pipe. For information write to Sales Offices or direct to General Offices.

Universal Vitrified and United States Concrete Products

Sewer Pipe
Liner Plates
Aerodrane Filter Block
Slipseal Sewer Joint
Segment Block
Meter Boxes
Ship-Lap Wall Coping
Septic Tanks
Drain Tile
Flue Lining
Stove Pipe
Chimney Tops
Chimney Pots
Fire Brick
Fire Clay

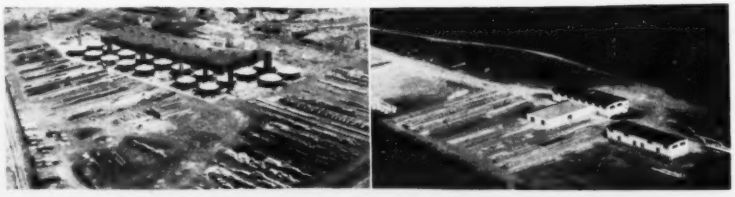
FACTORIES.

Baltimore, Md.
Cincinnati, Ohio
New Philadelphia, Ohio
Palmyra, Ohio (2)
Uhrichsville, Ohio (2)

SALES OFFICES:

Baltimore, Md., Box 7769
Halethorpe Branch
Telephone—Elkridge 790
Cincinnati, Ohio
P. O.—Newton, Ohio, Box 215
Telephone—Locust 7846

UNIVERSAL U.S. CONCRETE



UNIVERSAL SEWER PIPE CORPORATION
UNITED STATES CONCRETE PIPE COMPANY
GENERAL OFFICES • 1500 Union Commerce Building • CLEVELAND 14, OHIO

CONSTRUCTION REPORTS—Second Section

Third Section Construction Reports on page 348

WATER SUPPLY

BIDS ASKED

March 28

Ind., South Bend—City Water Wks. Bd., F. J. Bruggner, chn., 224 N. Main St., WW imprvs., incl., Contr. 7, 5,200 ft. watermain, Ohio and Sample Sts., Contr. 8, 9,300 ft. 10- and 20-in. c.i. watermain, Corby St., Contr. 9, 5,000 ft. 12-in. c. i. watermain, N. W. Main St., Contr. 10, rein.-con. reservoir, $950,000. Plans deposit $10. Chas. W. Cole & Son, La Salle St., consult. engrs., CD 12/1—ENR 1/6.

March 29

Calif., Antioch—State Div. Architecture, P Wks. Bldg., Sacramento, water, sewer and gas services for 23rd District Agricultural Assn. Anson Boyd, state archt.

March 30

O., Mansfield—City, E. T. Garrison, Service Safety Dir., Clearfork Pumping Station, $136,-000. Plans deposit $10. Installing pumps, pipes, valves and misc. materials, $12,000. Plans deposit $5. Jennings Lawrence Co., 12 N. 3 St., engr. CD 9/13/45—ENR 9/27/45.

Tex., Muleshoe—City, WW, elevated steel water storage; c. i. mains; supply well, etc. $45,000. Plans deposit $25. Hasie & Green Engr. Co., P. O. Box 1139, Lubbock, engrs.

April 4

●**Calif., Los Angeles**—City Dpt. Water & Power, 307 S. Broadway, Franklin-Baldwin Trunk Line, incl. approx. 48,000 ft. 57 in. I.D. pipeline and appurtenances, Alt. 1, rein.-con. cylinder pipe; Alt. 2, steel pipe cement mortar lined and coated; Alt. 3, steel pipe lined in place; Est. over $2,000,000. Baldwin Outlet Line, incl. approx. 36,000 ft. pipeline and appurtenances 54, 60 and 66 in. pipe, Alt. 1, rein.-con. cylinder pipe; Alt. 2, steel pipe cement mortar lined in coated; Alt. 3, steel pipe line in place, est. over $1,500,000. S. B. Morris, ch. engr. and genl. mgr. CD 1/15/45—ENR 1/25/45.

April 5

N. M., Raton—City, water distributing sys. addns. Over $28,000. Alfred J. Ryan, 1340 Glenarm Pl., Denver, Colo., consult. engrs. CD 4/25—ENR 5/13.

April 7

N. C., Winston-Salem—City, Ralph L. Dixon, secy., Bd. Alderman, Winston Salem, WW imprvts., Contr. 1 and 2, 36 in. diameter water transmission main from Yadkin River at Idol to Salem filter plant, 68,000 lin. ft.; Contr. 3 and 4, 8,800 lin. ft. 48 in. diameter water transmission main from Salem Reservoir to Salem filter plant; Contr. 5 and 6, intake structure and pumping station; Contr. 9, 725,000 gal. standpipe at Station 150 plus 00 along transmission main; Contr. 9, 10, 11, 12 and 12 A; alterations and addns. to existing 12 mg. filter plant and pumping station, enlarging to 20 m.g. plant; Contr. 13 and 14, cement lined c.i. water supply and distr. sys., piping. Contr. 22, 1 m. gal. elevated storage tank. John D. Springs, Niasen Bldg., and Albright & Friel, Inc., 1528 Walnut St., Phila., Pa., consult. engrs. CD 11/12/47—ENR 11/27/47.

April 19

Va., Portsmouth—At office W. Guy Ancell, city mgr., Portsmouth, Proposal 1, reconstructing filter bldg. and piping; Proposal 2, filter equip. for filters 1 to 10 inclusive, hydraulic operating sys. equip. for filters 11 to 18 inclusive; Proposal 3, combination proposal incl. work covered by Proposals 1 and 2, Proposal 4, wash water tank and columns on fdn. by others. Proposal No. 5, chemical conveyor equip. Plans deposit $25. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, consult. engr. CD 12/10/45—ENR 1/3/46.

LOW BIDDERS

Ariz., Phoenix—City, 1 Ave. and Washington St., installing 6,200 ft. 60 in. con. watermains on main city line near Scottdale pumping station, from Vinson Constr. Co., 2020 West Grant St., Phoenix, $214,252. R. Gail Baker, 1 Ave. and Washington St., engr.

Md., Hyattsville—Washington Suburban Sanitary Comn., 4017 Hamilton St., Mar. 8, Contr. 626-W, incl. 70,000 ft. 6- and 8-in. class 150 c. i. water pipe, from McWane Cast Iron Pipe Co., 1201 Vanderbuilt Rd., Birmingham, Ala., $137,-000; Contr. 627-W, 10,500 ft. 12- and 20-in. class 150 c.i. water pipe, from U.S. Pipe & Foundary Co., Lincoln—Liberty Bldg., Phila., Pa., $58,-810. CD 3/3.

Pa., Selinsgrove—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, Mar. 9, general constr. water distr. sys. addns. at Selinsgrove State Colony for Epileptics from The Albert Boyer Constr. Co., 236 Queen St., Northumberland, $27,449***standpipe from Pittsburgh-Des Moines Steel Co., Neville Island 25, Pittsburgh, $23,400***watermains and appurtenances from Corbit's Inc., Reading, $42,865. CD 2/15—ENR 2/17.

†**Tex., Camp Hood (P. O. Killeen)**—U. S. Eng., 606 Santa Fe Bldg., Galveston, Mar. 2, WW imprvs., Inv. Eng-41-243-49-181 from N. R. Smith, P. O. Box 140, Bryan, $34,995. CD 2/15—ENR 2/17.

CONTRACTS AWARDED

Ariz., Phoenix—City, 1 Ave. and Washington St., installing watermains in Annexed area, to J. H. Welsh & Son, 805 South Central Ave., Phoenix, $254,092. R. Gail Baker, City Hall, city engr.

Ill., Caseyville—Village, Edward E. Kraemer, village clk., watermain extens., Hollywood Dist., north of city limits, incl. 2- to 6-in. mains, to W. L. Hall Constr. Co., Atwood, $98,000.

●**Mich., Benton Harbor**—City, City Hall, water filtration plant, to Pearson Constr. Co., 240 W. Brittain Ave., 4,100 ft. 36-in. steel intake line installation to Luedtke Engrg. Co., Frankfort, Total, $1,789,000. Bids 12/16—ENR 12/8.

†**North Dakota**—U. S. Eng., Fort Lincoln, P. O. Box 300, Bismarck, dismantle, shipment and re-erect elevated storage tank, for Garrison Dam Dist. Eng-32-015-49-66 to W. E. Caldwell Co., 200 E. Brandeis St., Louisville, Ky., $59,556. CD 2/9.

Tex., Bellaire—Homecrafters, Inc., c/o Edward M. Hovas, 324 Hughes St. or 714 Milam St., Houston, water and sanitary sewer lines, street paving. Own forces. Approx. $75,000. CD 1/4—ENR 1/27.

Tex., Houston—Dr. C. Paul Harris, 3821 Caroline St., waterlines and facilities. Own forces. $30,000.

Tex., Houston—Highland Village Corp., 3713 Inwood St., c.i. waterlines. Own forces. $40,-000. Howe & Wise, 4119 San Jacinto St., engrs.

Tex., Houston — Martin Nadelman, 5305 Blythewood St., c. i. waterlines and facilities. Own forces. $40,000. Knoestman & Webster, 2017 W. Gray St., engrs.

B. C., Campbell River—Village Comns., Village Hall, WW sys., to G. W. Ledingham & Co. Ltd., 1025 W. 77 Ave., Vancouver, Approx. $43,000. Bids 3/1. Awarded 3/5. CD 2/15—ENR 2/17.

●**Que., Montreal** — Municipality, water intake Lachine Rapids, to Atlas Constr. Ltd., 4781 W. St. Catherine St., $3,080,000. H. A. Gibeau, city engr., CD 11/25—ENR 12/2.

SEWERS, WASTE DISPOSAL

BIDS ASKED

March 21

B. C., Burnaby—C. B. Brown, municipal clk., Municipal Hall, Edmonds, 27,000 ft. 4- to 12- in. vitr. clay pipe sewers, 91 manholes, sewer system, Willingdon Heights area, $100,-000. Plans deposit $25., F. C. Stewart, 207 W. Hastings St., Vancouver, engr. CD 9/7—ENR 9/16.

March 22

N. Y., Brooklyn—President Brooklyn Boro, Boro Hall, Zone 2, storm and sanitary sewers, E. 98 St., from Avenue L to sewer summit 320 ft. south of Avenue K. CD 5/17—ENR 5/27.

March 29

Calif., Los Angeles—Bd. Supervs., Los Angeles Co., 501 Hall of Records, sanitary sewers in Rio Hondo Ave., and other streets, 2.64 mi. 8 to 15 in. sewer pipe, vicinity of Rosemead, C.T.1207, $90,350. C. E. Arnold, co. surv. and engr.

March 30

Ala., Enterprise—City, Enterprise, sewage disposal works and sewer lines. Plans deposit $50. R. L. Kenan & Assoc., Bell Bldg., Montgomery, engrs.

Calif., Los Angeles—City Bd. P. Wks., 152 City Hall, sanitary sewer in De Soto Ave. and Sherman Way Sewer Dist., 8 and 33 in. sewer pipe, $168,797. CD 10/2—ENR 10/7.

Tex., Muleshoe—City, sanitary sewers, incl. collection lines, 3 lift stations, force mains, Imhoff tank. $65,000. Plans deposit $25. Hasie & Green Engr. Co., P. O. Box 1139, Lubbock, engrs.

March 31

Tex., Angleton—City, Carlos Masterson, mayor, Angleton, sewage disposal plant. $115,000. Plans deposit $25. Garrett Engr. Co., 5008 Almeda Rd., Houston, engr. CD 1/5—ENR 1/20.

April 1

Wis., Delavan—City, sewage treatment plant. Plans deposit $10. Jensen & Johnson, Elkhorn, engrs. CD 2/8/45—ENR 2/22/45.

April 6

Pa., Lemoyne—Lemoyne Boro, 332 Herman Ave., sewerage sys. incl. 58,000 lin. ft. 8 to 18 in. vitrified sewers; 24,000 lin. ft. 6 in. vitrified sewer house connections; 240 brick manholes; sewage treatment plant, incl. control bldg., primary settling tanks, sludge digester, sludge drying bed, chlorine contact tank, fencing, etc. Plans deposit $20 for sewerage sys. $15, sewage treatment plant. Gannett, Fleming, Corddry & Carpenter, Inc., 600 N. Second St. Harrisburg, consult. engrs. CD 6/14/46—ENR 6/27/46.

LOW BIDDERS

Ala., Wetumpka—City, Mar 7, extending sanitary sewers, from Seabee Constr. Co., Tuscaloosa, $105,752. CD 2/21—ENR 2/24.

Colo., Colorado Springs—City, R. F. Sonnekson, city clk., City Hall existing municipal sewage treatment plant, addns., alterations, from Raymond C. Whitlock, 2719 Cascade Ave. $107,900, est. Over $50,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., archts. and engrs.

R. I., Warren—Town, Felix Brocu, Comrs. Sewers, Town Hall, rejected bids Feb. 16, sewage treatment plant, incl. grit chambers, chlorinators, sludge pumphouse, etc. L. B. $285,900. CD 3/1—ENR 3/3. under LB.

Tex., San Antonio—City, Mar 3, relief sanitary sewer, S. Alamo and S. St. Marys to Broadway and 12 Sts. from Walsh Constr. Co., Electra, $199,329. Est $149,000. CD 2/18—ENR 2/24.

Wis., Monroe—City, Feb. 23, general constr. sewage treatment plant addn. from E. M. Scheflow, Elgin, Ill., $188,500. CD 1/25—ENR 1/27.

CONTRACTS AWARDED

Colo., Aurora—City, Aurora, sewer constr. proj. in 8 block area, extending on south side of center of Colfax Ave. from Akron St. to Emporia St., cutoff with extend north of Akron St. to empty water in Sand Creek north of city, to Birchby & Nauman Constr. Co., 1750 Jamine St., Denver, $66,000, est. Over $50,000.

Tex., Houston—Dr. C. Paul Harris, 3821 Caroline St., sanitary sewers, draining and grading. Own forces. $65,000.

Tex., Houston—Highland Village Corp., 3713 Inwood St., sanitary sewers and drainage ways. Own forces. Approx. $60,000. Howe & Wise, 4119 San Jacinto St., engrs.

Tex., Houston—P. C. Stewart, 5308 Carrollton St., drainage between Askew and Golfcrest Blvd. along Gulf Freeway. Own forces. $60,000.

B. C., Penticton—City, City Hall, 5 mi concrete sewer mains, laterals, to G. W. Ledingham & Co. Ltd., 1025 W. 77 Ave. Vancouver, $65,358. Awarded 2/28. W. E. Warburton, city engr. CD 4/13—ENR 4/29

BRIDGES

BIDS ASKED

March 23

Ia., Emmetsburg—Bd. Supervisors, Palo Alto Co. Court House, Emmetsburg, concrete superstructure, treated piling substructure, 24x32 ft. skew 1-beam bridge, T. R. Martin, co. engr.

March 29

†**California**—U. S. Eng., Wright Bldg., Sacramento, bridge and weir for Pine Flat Project near Piedra, Spec. 1341.

N. Y., Delhi—at office Malcolm MacPherson Supt. Delaware Co., Page Ave., Contr. No. 1 Dunraven-New Kingston County Rd. Proj. No. 46, 0.1 mi. roadway, superstructure abutments and approaches, grading and foundation course, Bridge 6-1. Est. $52,990; Contr No. 2, East Masonville-Sidney Center County Road, Proj. No. 48, 0.02 mi. superstructure abutments and approaches, grading and foundation course Bridge 35-1. Est. $15,514 Plans deposit $10 each. adv. ENR 3/10.

LOW BIDDERS

New Jersey—State Hy. Comn., Spencer Miller, Jr., Comr., Trenton, Mar. 9, constructing Federal St., in city of Camden, Camden Co. from John F. Lafferty, Jr., Contr., Haddonfield, $276,263. CD 2/17—ENR 2/24.

New York—Dpt. P. Wks., Bertram D. Tallamy, supt., Alfred E. Smith State Office Bldg., Albany, Mar. 9, 0.36 mi. Fort Plain Village-Hancock St. Pt. 2, S.H. 9277, Fort Plain-Canajoharie S.H. 8345, Fort Plain Village-Hancock St. S.H. 1866, G.B.C. 49-27 Montgomery Co. from Howes & Farrell, Wampsville St., Oneida, $378,368. Est. $393,-000. CD 2/18—ENR 2/24.

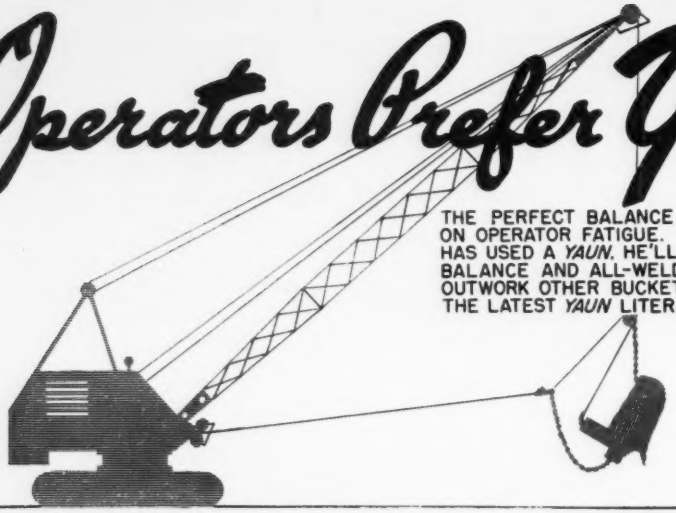
Oregon—State Hy. Dpt., State Office Bldg., Salem, rejected bids Mar. 1, constructing 2 rein.-con. bridges and 0.57 mi. highway roadbed on Sandy Creek and Rock Creek Bridge sects. of Coos City-Roseburg Hy. FAP F-151 (1) and F-29 (2). Douglas Co. L.B. $119,101.

†**Virginia**—Pub. Roads Admin., 1440 Columbia Pike, Arlington, Mar. 8, 33.651 mi. Blue Ridge Parkway, Proj. 185-J3-K8, Bedford Rockbridge and Botetourt Counties from Robertson-Henry Co., Huntington, W. Va., $360,983. CD 2/11—ENR 2/17.

CONTRACTS AWARDED

Kan., Kansas City—City, City Hall, Central Ave., viaduct, to George Bennett Constr. Co., 1520 Central Ave., Kansas City, $849,693. Bids 2/17. CD 3/1—ENR 3/3. under LB.

Operators Prefer Yaun



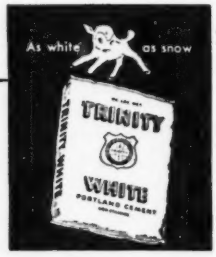
THE PERFECT BALANCE OF A *YAUN* CUTS DOWN ON OPERATOR FATIGUE. ASK ANY OPERATOR WHO HAS USED A *YAUN*, HE'LL TELL YOU THEIR PERFECT BALANCE AND ALL-WELDED CONSTRUCTION WILL OUTWORK OTHER BUCKETS. ASK YOUR DEALER FOR THE LATEST *YAUN* LITERATURE, OR WRITE DIRECT.

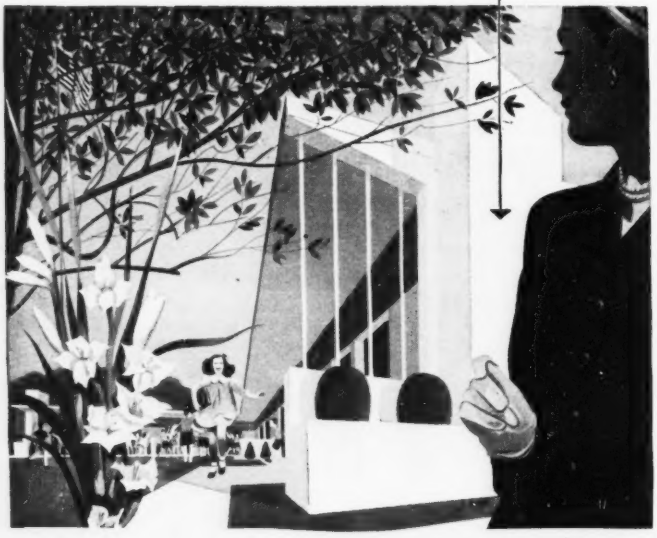
YAUN DRAGLINE BUCKETS AND MFG. PLANT

BATON ROUGE, LA.

Trinity White

the whitest white cement!





Trinity White is a true portland cement made from selected raw materials. It has all the excellent portland cement qualities of strength, endurance and workability. Use Trinity by itself for whiteness—with pigments for purer, truer color values. Use it in architectural concrete units, terrazzo, stucco. Trinity White Portland Cement — plain or waterproofed. Trinity Division, General Portland Cement Co., 111 W. Monroe St., Chicago; Republic Bank Bldg., Dallas; 816 W. 5th St., Los Angeles.

TRINITY WHITE PORTLAND CEMENT

†**Mississippi** — P. Rds. Admin., 305 Medical Arts Bldg. Florence, Ala., concrete overpass box culvert, Proj. 312, Natchez Trace Parkway, to Baird & Latimer, Selma, Ala., **$176,944.** Bids 3/4. CD 2/10—ENR 2/17.

●**New York**—Bureau Contracts & Accounts, Albany, grading 0.28 mi. Bronx River Parkway and 3 bridges in vicinity of Gun Hill Rd., Bronx Co. to Lawrence J. Rice, Inc., 30 Deepdon Rd., Forest Hills, **$1,318,961.** Bids 1/12. CD 1/14—ENR 1/20, under LB.

North Dakota—State Hy. Dpt., Bismark, Mar. 4, 1.054 mi. underpass structure, air-entrained Portland cement, concrete paving, b. conc. etc. St. Hy. No. 14 in Towner, FAGM-390 (10), McHenry Co. to Okes Constr. Co., E. 1501 1st. Natl. Bank Bldg., St. Paul, Minn., **$361,666.** CD 2/18—ENR 2/24.

Oregon—State Hy. Comn., State Office Bldg., Salem, construct 233 ft. rein.-con. viaduct and 0.37 mi. highway roadbed on Marbs River Bridge sect. of Kings Valley Hy., FAP S-38 (2) Benton Co. to Lindstrom Bros., 7335 N. E. Broadway, Portland, **$74,967.** Bids 3/1.

Oregon—State Hy. Dpt., State Office Bldg., Salem, constructing 3 rein.-con. bridges and 0.8 mi. highway roadbed on Shields Creek and Looking-glass Creek bridge sect. of Coos Bay-Roseburg Hy., FAP F-29 (4), Douglas Co. to Lindstrom Bros., 7335 N. E. Broadway, Portland, **$180,022.** Bids 2/28.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, Contr. B-106 Walnut Lane Bridge to Henry W. Horst Co., 15 and Race Sts., **$698,383.** CD 1/26—ENR 2/3, under LB.

Tex., Houston—Dr. C. Paul Harris, 3321 Caroline St., roads and streets. Own forces. **$55,000.**

Tex., Houston—Highland Village Corp., 3713 Inwood St., street paving. Own forces. **$55,000.** Howe & Wise, 4119 San Jacinto St., engrs.

Saskatchewan—Dpt. Hys. & Transportation, Regina, substructure 1,200 ft. traffic bridge over South Saskatchewan River, 2 mi. north Swift Current, to Bird Constr. Co. Ltd., Seventh and Smith St., Regina. Approx. **$588,260;** steel to Dominion Bridge Co. Ltd., Lachine, Que. Approx. **$148,500.** Bids 2/18. CD 1/14—ENR 1/20.

STREETS AND ROADS

BIDS ASKED

March 21

N. Y., Brooklyn—President Brooklyn Boro, Boro Hall, Zone 2, reflagging west side of Bedford Ave. and 15 other locations; curbing and flagging, Glenwood Rd. and reflagging 18 other locations; b. conc. on. 6 in. concrete base, E. 29 and E. 32 Sts.; furnishing and erecting chain link fences east side of Dahill Rd. and 25 other locations. CD 8/28/44—ENR 9/7/44.

N. Y., Brooklyn—President Brooklyn Boro, Boro Hall, Zone 2, grading E. 98 St. from Avenue L to Avenue K.

March 23

Colo., Denver—City and County of Denver, Thomas P. Campbell, mgr. Imp. & Parks, City and County Bldg., Denver, reconstr. 6 and 7 Aves., from Broadway east to Pennsylvania on E. 7 Ave., south of Pennsylvania and east of E. 6 Ave. to Monroe St. Terry Owens, City and County Bldg., city engr.

March 29

N. Y., Woodside—New York City Housing Auth., 63 Park Row, New York Zone 7, street and yard imprvs. for Woodside Houses, Proj. No. NYC-8, in area bounded by 31 Ave., 61 St., Northern Blvd., Newton Rd. and 49 St., Queens Boro. Plans deposit $25.

March 31

†**S. C., Parris Island (Ind. Br. Beaufort)**—Officer Charge of Constr., Parris Island, paving road to Golf Club House and Ribault Monument area at Marine Corps Recruit Dept. Noy 17150. Spec. 21032. Plans deposit $10.

April 1

Ky., Whitesburg—Letcher Co., Whitesburg, grading, draining 27 mi. roads.

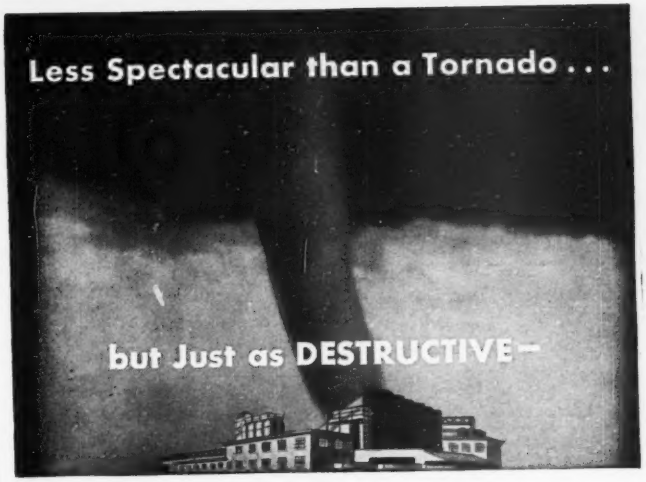
April 4

Calif., Martinez—Contra Costa Co., Hall of Records, portion of Kirker Pass Hy., County Rd. D-5, over $50,000. Plans deposit $15. Joseph W. Barkley, Hall of Records, engr. CD 11/18—ENR 12/9.

LOW BIDDERS

Arizona—State Hy. Comn., Phoenix, Mar. 4, base material and bit. road mix 1 mi. beginning about 5½ mi. northwest of Clifton and exten. northwesterly toward, Morcenl, C-59(3) AFE 704, Clifton-Morcenl Hy., from Peter Kiewit Sons Co., 1950 S. Colorado Blvd., Denver, Colo. **$245,445;** grading, draining roadway over improved alignment 1 mi. beginning about 4 mi. nortwest of Clifton and extending northwesterly along Chase Creek NON-FAS 101 (1940) AFE 6604, Clifton-Springerville Hy., from Packard Constr. Co., Luhrs Tower, Phoenix, **$164,315.** CD 2/26.

●**New York**—Dpt. P. Wks., Bertram Tallamy, supt. Alfred E. Smith State Office Bldg., Albany, Mar. 1, 6.31 mi. Falsenville-Catskill S. H. 4231, Catskill Thruway (Ulster County Line



RUST

Costs the Nation $6,000,000,000* Yearly!

Day and night—*twenty-four hours a day*—rust gnaws at your property. Not as dramatic as a tornado or other fear-inspiring disaster, rust costs you plenty in a year's time. You pay your full share of the nation's annual $6 billion loss from rust . . . unless you protect iron and steel surfaces against this *metal-consuming* menace.

RUST CAN BE STOPPED! Industry, railroads and public utilities find Rust-Oleum the best answer to their rust problems. It seals the surface so thoroughly that rust can't get started. Applied to iron and steel—even where rust has already begun—Rust-Oleum resists destructive conditions . . . rain, snow, dampness, salt air, heat, fumes and ordinary weathering.

*Estimated on the basis of 2% wastage of iron and steel due to rust.

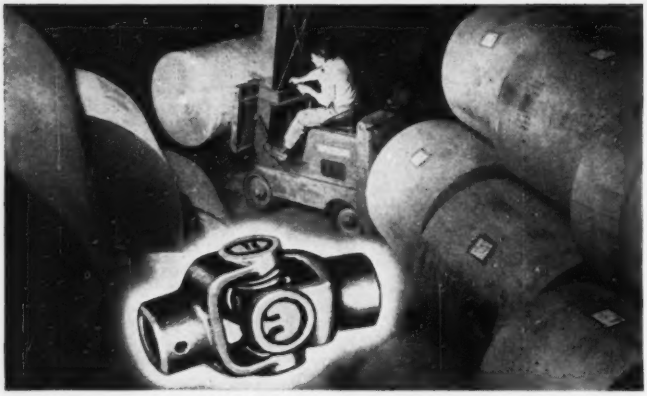
● *Get the Facts!*

Stop this destruction. Metal replacement is costly! Save your property with Rust-Oleum. It gives lasting protection. Tell us your rust problems. We'll send you specific recommendations promptly. See our complete catalog in Sweet's, or write us today for your copy.

Rust-Oleum is available for immediate delivery through Industrial Distributors in all principal cities . . . who stock Rust-Oleum and other factory supplies for your convenience.

RUST-OLEUM CORPORATION
2475 Oakton Street, Evanston, Illinois

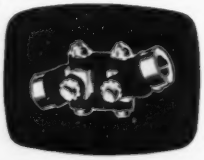
RUST-OLEUM
Stops Rust!



Wherever FLEXIBLE POWER is used you'll find BLOOD BROTHERS *Universal Joints*

The husky, nimble little warehouse lift trucks . . . the great steam engines which haul goods to and from the warehouses . . . and many of the machines, of all shapes and sizes, in between depend on Blood Brothers Universal Joints for flexible power.

You, too, can turn to Blood Brothers to solve your problems in flexible power. We have the engineering experience, the skilled workmen and the production facilities to meet your requirements swiftly, efficiently and economically.



Write for complete engineering data

Universal Joints for Industry

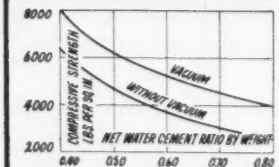
BLOOD BROTHERS MACHINE CO.

Allegan, Michigan • Chicago Offices: 122 S. Michigan Ave.

Division of Standard Steel Spring Company

Supplying original manufacturers only, replacement parts should be ordered through him

VACUUM CONCRETE



FOR CONCRETE ROAD REPAIR

Resists abrasion—perfect bond under pressure ¾ ton/sq. ft.

Write for further information

VACUUM CONCRETE INC. 4210 SANSOM ST. PHILA. 4, PA.

Brick School House C. T. 46-2; Brick School House Rd. to S. H. 8231, C. T. 3, Saugerties-Catskille, Pt. 3, S. H. 5027, FA. RC. 49-25, C. T. R. C. 49-22, RC 49-24, Greene Co. from The Lane Constr. Corp., 37 Colony St., Meriden, Conn., **$1,336,522*****10.94 mi. Woodbourne-Ellenville, Pts. 1, 2A and 2B, S. H. 49-4, S. H. 49-6 and S. H. 49-7, Ulster and Sullivan Counties and 1.49 mi. South S. H. 223, FA. RC. 49-1, Dutchess Co. from Berlanti Constr. Co. Inc., 18 Oakland Ave., Harrison, **$1,296,936.** Est. $1,346,000 and **$432,345.** Est. $465,000 respectively ***0.62 mi. Cross Bronx Expressway (Contr. 10E), F. A. CBE. 49-1, Bronx Co. from Tully & DiNapoli, Inc., 164 St., and Gull Contrg. Co. Inc., 187-02, 50 Ave., Flushing, **$3,993,383.** Est. $4,281,000***2.13 mi. Finchville-Smith Corners County Rd., 35, FA. SS. 49-11, Orange Co. from Green Island Constr. Co., Green Island, **$184,989.** Est. $206,000***2.1 mi. Waterville-New Hartford, Pt. 2, S. H. 4298, Utica-Oneida, Pt. 1, S. H. 250 New Hartford Village S. H. 5052, FA. RC. 49-14, Oneida Co. from E. G. DeLia & Sons Constr. Corp., New Hartford, **$528,456.** Est. $561,000****received no bids Mar. 9, 6.72 mi. Major Deegan Expressway (Contr. 1A) FA. MDE. 49-1, Bronx Co. Est $2,116,000. CD 2/18—ENR 2/24.

Oregon—State Hy. Comn., State Office Bldg., Salem, rejected bids Feb. 28, Rainrock-Alderwood Park rock production proj. on Suislaw and Alsea-Deadwood Hy., Lane Co., L. B **$145,000*****0.65 mi. paving, minor grading, Troutdale Sect. of Columbia River Hy. FAP PI-301 (3), Multnomah Co. from C. T. Malcom & Co., 4085 N. Columbia Blvd., Portland, **$134,281.**

Oregon—State Hy. Comn., State Office Bldg., Salem, Mar. 1, grading surfacing, oiling, furnishing 4,200 cu. yd. crushed gravel for Snider Creek-Crater Lake Junction sect. of the Sams Valley secondary Hy., FAP S-52 (1) and FAS 52 (2), Jackson Co. from Walter Berndt Constr. Co., Vancouver, **$211,458.**

CONTRACTS AWARDED

Arizona—State Hy. Comn., Phoenix, grading, draining 5 mi. State Hy. 75 over new Alignment east of Safford to R. H. Martin Constr. Co., **$187,000.** Bids 2/9, awarded 3/1 CD 2/9.

Calif., Pasadena—City, Pasadena, resurfacing 33 streets, Bella Vista Ave. and others, to Griffith Co., 1060 S. Broadway, Los Angeles, **$66,040.** Bids 1/31, awarded 2/23. CD 11/15/44—ENR 11/30/44.

Ia., Emmetsburg—Bd. Supervisors, Palo Alto Co., Court House, Emmetsburg, 80,000 cu. yd. grading, 314,000 cu. yd. class 10 excavating, 34 mi. secondary county roads to Adolph G. Anderson, Spencer, **$73,880.** T. R. Martin co. engr.

Nebraska—State Dpt. Road and Irrigation, Lincoln, c. conc. State Road 224-D and 296-B within town of Ogallala, Keith Co. to Case C.-Contractors, Ogallala, **$50,552.** Bids 3/3 CD 2/14—ENR 2/17.

●**New Jersey**—State Hy. Dpt., Trenton, cross connection, grading, State Street Bridge and retaining walls, Rt. 26 Extens., Sect. 1-B, Mercer Co. to Franklin Contrg. Co., 12 Central Ave., Newark, **$1,373,814.** Bids 2/10. Awarded 3/8. CD 2/14—ENR 2/17, under LB.

North Dakota—State Hy. Dpt., Bismarck, base, b. conc. etc., 19.934 mi. St. Hy. No. 25 from Hanover north and Stanton west, F-686 (2), F-235 (12) and S-135 (2) Mercer and Oliver Counties to Northwestern Engr. Co., Rapid City S. D., **$448,748.** Bids 3/4. CD 2/18—ENR 2/24

Oregon—State Hy. Comn., State Office Bldg., Salem, grading, surfacing and oiling 5.65 mi Sheeley Bridge-Sunset Camp Sect. of Upper Nehalem county road, FAP S-279 (2), Columbia and Washington Counties to Homer G. Johnson, 3166 N. Greeley St., Portland, **$138,889.** Bids 2/28.

Tex., Houston—Harris Co., c/o Hugh A. May, Comr. Precinct 2, Courthouse, road constr. incl. asph. resurfacing, 2.2 mi. Wolff Rd.; 2.47 mi. Crosby-Huffman Rd., force-account, **$78,000.** Hugo Zago, county engr. CD 8/28/47—ENR 9/18/47.

Tex., Houston—P. C. Stewart, 5308 Carrollton St., street paving, hard surfacing. Own forces. Approx. **$70,000.**

Wisconsin—State Hy. Comn., Madison, c. conc. and bit. 12.296 mi. Beaver Dam-Waupun Rd., U. S. Hy. 151, Contr. 1, Proj. F 017-2 (3), to Rock Road Constr. Co., 5915 Rogers Ave., Chicago, Ill., **$547,248.** CD 3/7—ENR Ave., Chicago, Ill., **$547,248.** CD 3/7—ENR

Alta., Edmonton — Municipality, paving, to Crown Paving & Constr. Co. Ltd., 7-104 Ave., **$534,987.**

EARTHWORK, WATERWAYS

BIDS ASKED

March 21

●**Ont., Ingersoll**—W. H. Porter, secy., c/o Upper Thames Valley Authority, 1,400,000 cu. yds. excavation, rip-rap, channel imprv. south branch Thames River from Beachville through Ingersoll, approx $1,000,000. G. G. Reid, 264 Avenue Rd., Toronto, engr., CD 2/28—ENR 3/17.

March 25

†**Missouri**—U. S. Eng., 826 U. S. Court House, and Custom House, 1114 Market St., St. Louis, Zone 1, levees, Perry Co. Levee Dist. 1, 2 and 3, Proj., Item II-A, Perry Co., Serial No. Eng. 23-065-49-112. CD 3/2—ENR 3/10.

At Last! A WIRE ROPE HANDBOOK FOR THE MAN ON THE JOB!

It's new . . . It's different . . . It's easy to understand

J&L STEEL

TABLE OF CONTENTS

	PAGE
Introduction	5
Section I. Installing, and Operating Wire Rope — Unreeling, uncoiling, spooling, fleet angle, sheaves and drums, break-in, smooth operation, lubrication, inspection, saving rope, abuses, when to get a new rope.	7
Section II. Selecting the Correct Wire Rope for the Job — Strength, flexibility, resistance to abrasion, crushing strength, dimensions, strands and rope construction, grades of steel, fabrication, type of core, lay, examples of orders, and where to buy rope.	23
Section III. Catalogue of Standard J&L Wire Rope Constructions	47
Section IV. Standard Fittings, Slings, and Splicing Service Available with J&L Wire Rope	67
Section V. General Recommendations for Ropes in Use on Standard Equipment	87

3

This 96-page illustrated book is especially written for the machine operator who handles wire rope constantly on his job. And its handy size—4⅜" x 7½"—fits into your pocket, ready for instant reference. It's yours for the asking!

SEND FOR YOUR COPY NOW!

Jones & Laughlin Steel Corporation
428 Jones & Laughlin Building
Pittsburgh 19, Penna.

Gentlemen:

Please send me a free copy of your new handbook "Wire Rope is a Machine."

Name_____

Company_____

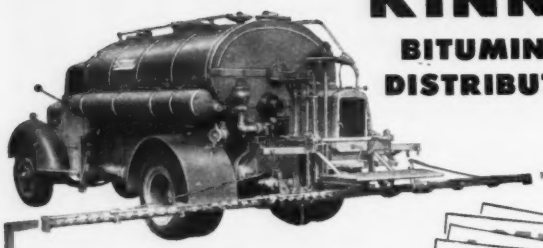
Address_____

JONES & LAUGHLIN STEEL CORPORATION

From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in OTISCOLOY *and* JALLOY *(hi-tensile steels).*

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

KINNEY
BITUMINOUS DISTRIBUTORS



BUILT FOR TODAY AND TOMORROW!

Kinney Bituminous Distributors fully meet the toughest test — the test of time. These soundly built units are not built to a price but to give top performance on their first job and on every other job for years to come. Every feature of Kinney Distributors — including their exclusive Rotating Plunger Pump — is quality-constructed to give trouble-free, low-cost service. That's why people who think ahead to tomorrow, buy KINNEY — today.

Write for new Bulletin A-48

KINNEY MANUFACTURING COMPANY

3527 WASHINGTON ST., BOSTON 30, MASS.

New York • Chicago • Cleveland • Philadelphia • Los Angeles • San Francisco

We also manufacture Vacuum Pumps, Liquid Pumps and Clutches

Important TO HEALTH AND EFFICIENCY

COOL, PURE DRINKING WATER ...ON THE JOB

Dobbins Portable Sanitary Drinking Fountain

Assures an adequate supply of cool, pure drinking water for workers *everywhere*—in factory or field. Protects their health, and keeps them on the job. Fountain has inner water container of stainless steel. Four gallon tank is fully insulated. Constant air pressure for instant flow of water is furnished by a few strokes of the pump at widely spaced intervals. *Operates at the press of a button*, like any bubbler drinking fountain. May be easily carried from place to place by shoulder strap, or mounted on truck, tractor or locomotive.

Banishes germ-spreading cups, dippers, pails.

DOBBINS MANUFACTURING CO.
DEPARTMENT 353A ELKHART, INDIANA

Dobbins Superbilt PORTABLE DRINKING FOUNTAIN

WRITE TODAY FOR FREE DESCRIPTIVE FOLDER

March 28

†Washington — Bureau Reclamation, Dpt Interior, Coulee Dam, constructing draft tube bridge ramp extens. and footings for river crossing towers for power feeder No. 4. Spec. B-CB-18 (Region 1), Columbia Basin Proj.

March 30

P. E. I., Souris—J. M. Somerville, secy c/o Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. breakwater repairs, approx. $50,000. Plans deposit $20. R. Blais, c/o owner, engr.

March 31

†Oregon—U. S. Eng., 19 E. Poplar St. Walla Walla, Wash., design, fabrication and delivery of one metal-enclosed power center and two metal-enclosed weather-proof control stands for McNary Dam. Serial No. Eng. 45-164-49-32. Extended date. CD 3/2—ENR 3/10. Under State of Washington.

Ont., Spencerville — A. Rodgers, Billings Bridge, dam on South Nation River, incl 9 mi. diversion canal and 4 dams, for South Nation Conservation Authority, Kilburn Engrs Co. Ltd., 18 Adelaide St., Toronto, engrs. CD 12/17.

About April 1

†Illinois—U. S. Eng., 826 U. S. Court House and Custom House, 1114 Market St., St. Louis Zone 1, Mo., levees in Prairie Du Rocher, and vicinity (Item V-B) (Edgar Lakes, Prairie Du Rocher and Modoc Drainage and Levee Dists.) Randolph Co., including 150,000 cu. yd. levee embankment, 10 acres seeding and mulching, 1540 cu. yd. tamped backfill, two 66-in. sluice gates, etc.

About April 4

†N. M., Roswell—U. S. Eng., P. O. Box 1538, Albuquerque, clearing approx. 10 acres river channel; channel excavation, approx. 50,000 cu. yds. for 2 mi. of new river channel; fence relocation, approx. 20 rods to be removed and replaced. Inv. 29-085-49-63.

April 5

La., Hammond—Tangipahoa Parish School Bd., Amite, Proj. A, alterations, repairs to main bldg., Annie Eastman High School, Proj. B, alterations, addns. to gymnasium bldg. Plans deposit $20. Favrot & Reed, 402 Nola Bldg., New Orleans, archts.

On or About April 6

†Ga., Atlanta—U. S. Eng., Post Office Bldg., Savannah, bldg. alterations, addns., 699 Ponce de Leon Ave.

About April 8

†N. C., Fort Bragg—U. S. Eng., 308 Customhouse, Wilmington, family quarters, Inv. No. Eng-31-075-49-35. CD 1/6—ENR 1/20.

April 6

†O., Cincinnati—U. S. Eng., P. O. Box 59, Louisville 1, Ky., constructing Recorder Wells and office, alterations and repairs at pump stations and gates. Contr. No. 22. Serial No. Eng-15-029-49-20.

April 7

La., Opelousas—St. Landry Parish School Bd., Opelousas, 5 auditorium and gymnasium bldgs. Extended date. CD 1/4—ENR 2/3.

On or About April 9

Pa., Altoona—U. S. Eng., 925 New Federal Bldg., Pittsburgh, Pa., quarters bldg. for Veterans Admin. General Medical Hospital. Serial No. ENG—36-058-49-97.

About April 12

†Kansas—U. S. Eng., 601 Davidson Bldg., Kansas City, Zone 8, Mo., raising stock yard bridge, stock deck revisions, levee fill, slope protection, etc. Kansas City, mile 1.68 on Kansas River. Serial No. Eng., 23-028-49-174.

April 12

Calif., Calexico—Calexico Elementary School Dist., classrooms and administration bldgs., Rockwood School, $388,000. Plans deposit $10. Bowen, Rule & Bowen, 2853 Gilroy St., Los Angeles, 26, engrs. CD 11/8—ENR 12/9

Miss., Forest — Scott Co., hospital, $348,000. E. L. Malvaney, Millsaps Bldg., Jackson, archt.

†Virginia—U. S. Eng., foot of Front St., Norfolk Zone 1, dredging Eastern Branch of the Elizabeth River, Norfolk Harbor. Serial No. Eng-44-110-49-27.

April 13

†Tenn., Oak Ridge—U. S. Atomic Energy Comn., P. O. Box 365, Attention Community Constr. Sect., Oak Ridge, constructing 286 duplex dwellings units, in Neighborhood No. 10. Inv. No. 401-49-10A. Plans deposit $25. CD 2/23—ENR 3/10.

About April 14

†Kentucky—U. S. Eng., 302 U. S. Court House, Nashville, Tenn., clearing segments Group 3, Wolf Creek Reservoir, Wayne Pulaski, McCreary, Laurel and Whitley Counties. Serial No. Eng. 40-058-49-71. CD 6/9/41—ENR 5/12/41.

About April 18

†N. M., Albuquerque—U. S. Eng., P. O. Box 1538, constructing Bldg A-17, Sandia Base. Serial No. 291-49-90. Plans deposit $45.

April 25

†Mississippi—U. S. Eng., P. O. Box 60, Vicksburg, pumping station, incl. pumps, equip., floodgates, intake and outlet channels, approx. 400 ft. levee, lower end Walker Lake, 3 mi. southwest of Greenwood, Leflore Co.

About May 31

†Pa., Erie—U. S. Eng., Engineer Park, Buffalo 7, N. Y., residence bldgs., Veterans Admin. Hospital Proj. Serial No. Eng-30-023-49-46.

LOW BIDDERS

●†California—U. S. Eng., 75 S. Figueroa St., Los Angeles, Mar. 4, Los Angeles River Imprvt., Tujunga Wash to Whitsett Ave., River Mile 37.71 to River 38.61, Serial No. Eng-40-353-49-47, from Matich & Yaeger, P. O. Box 396, Colton, **$1,220,694.** CD 2/14—ENR 2/24.

†Georgia—U. S. Eng., P. O. Box 1169, Mobile 7, Ala., Mar. 8, tailrace channel deepening at Allatoona Dam, Etowah River, Serial No. Eng-01-076-49-101, from Carlton Contracting Co., Albany, **$437,151.** CD 3/2.

†Louisiana—U. S. Eng., foot Prytania St., New Orleans, Zone 9, Mar. 3, rein.-con. walls for Algiers Lock, Serial No. Eng., 16-047-49-116, from Stevens Bros. & Miller Hutchinson Co., Inc., 730 Gravier St., New Orleans, **$917,442?.** CD 2/3—ENR 2/10.

†Pennsylvania—U. S. Eng., P. O. Box 1715, Baltimore 3, Md., Mar. 4, Williamsport Flood Protection Project, Levee Unit No. 2B, Williamsport, Lycoming Co., Inv. No. Eng-18-020-49-53 from Frank Bryan, Inc., 1263 Chartiers Ave., McKees Rocks, **$275,812.** CD 2/28.

Pennsylvania—Dpt. Forests & Waters, 404 Education Bldg., Harrisburg, Mar. 8, silt impounding basins on the Schuylkill River, Seyfert No. 1 and Seyfert No. 2 from Williams Constr. Co., Pottsville, **$253,680** and **$198,550** respectively***Oaks Site and North Abrams Site from James D. Morrissey, Inc., Willits and Home Ave., Phila., **$531,097.** CD 2/23—ENR 3/3.

●†South Dakota—U. S. Eng., 1709 Jackson St., Omaha, Neb., Mar. 8, hydraulic turbines for Fort Randall Power Proj. Inv. No. Eng-35-066-49-172 from Allis-Chalmers Mfg. Co., 1126 S. 70 St., Milwaukee, Wis., **$2,500,600.** CD 1/26—ENR 2/3.

●†Tex., San Angelo—U. S. Eng., 606 Santa Fe Bldg., Galveston, completing embankment spillway and service for San Angelo Dam and Reservoir Proj. from Winston Bros. Co., and Taylor-Wheless Co., c/o owners, **$5,644,874.** Est. Over $2,500,000. CD 1/17—ENR 1/20.

†Virginia—U. S. Eng., foot of Front St., Norfolk, Mar. 8, maintenance dredging in the James River from Richmond Deepwater Terminal to Hopewell, Serial No. Eng-44-110-49-142 from Atkinson Dredging Co., Great Bridge, **$206,915.** Est. $206,789. CD 3/2.

CONTRACTS AWARDED

●†Kansas—Bureau Reclamation, Dpt. Interior, Ellis, Cedar Bluff Dam and relocation County road, Missouri River Basin Proj., Spec. 2483, to C. F. Lytle Ct. 505 Nebraska St., Sioux City, Ia., Amis Constr. Co. 1647 Exchange Ave., Oklahoma City, Okla., and Mac Donald Const. Co., McPherson, **$11,350,735.** Bids 2/8. Awarded 3/4. CD 2/11—ENR 2/17, under LB.

†Kansas—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., two 4x5 ft. high pressure gates, two 110,000 lb. hydraulic hoists, 2 gate hangers, two 66-in. transitions, conduit lining, Cedar Bluff Dam outlet Wks., Missouri River Basin Proj., Spec. 2515, to Albine Engine & Machine Wks., Inc., 2860 N. W. Front St., Portland, Ore., **$33,917.** Bids 1/27. Awarded 3/4. CD 12/27—ENR 1/16.

CONTRACTS AWARDED

Ont., Kingston—Municipality, 11,800 ft. steel sheet piling at Municipality dock, to Russell Constr. Co. Ltd., Harbour Bldg., Toronto, Approx. **$150,000.** Gore & Storrie, 1120 Bay St., Toronto, engrs., CD 11/5—ENR 11/11/43.

AIRPORTS AND AIRBASES

BIDS ASKED

April 1

Okla., Tulsa—CONTROL TOWER—City, Park Bd., Municipal Bldg., airport control tower, $100,000. Leon B. Senter, Philtower Bldg., archt. CD 1/12/45—ENR 1/25/45.

About April 1

†R. I., Hillsgrove—HANGAR—U. S. Property & Disbursing Officer for Rhode Island, 51 Stenton Ave., Providence, Zone 6, hangar for Liaison Type planes, Theodore F. Green Airport. Plans deposit $10. CD 9/9/43—ENR 9/18/43.

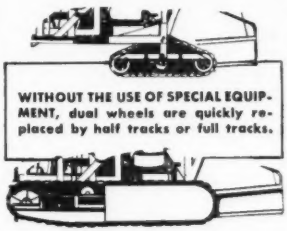
April 5

Colo., Grand Junction—AIR TERMINAL—City, T. I. Moore, city mgr., City Hall, 1 story part bamnt., 50x194 ft., brick air terminal **$70,000.** Smith Hegner & Moore, 504 First Natl. Bank Bldg., Denver, archts. CD 1/26—ENR 2/3.

BADGER
TRENCH EXCAVATOR
FAST, CLEAN, ECONOMICAL
7 to 24 inch width
up to 11 foot depth

Pennies saved per foot of trenching assure more profit dollars per job!

Over fifty advancing speeds equip the one-man *economical* Badger Trench Excavator to operate *in and on* any kind of soil. Patented high speed shovels dig fast and uniformly . . . do not require an unwieldly, bulky machine to assure 'bite' or purchase. Reversible cross conveyor and trench shields keep waste away from trench. Overload safety clutch protects machine and prevents damage as the Badger digs forward or backward, over, under and around obstructions. Ball bearings on all high speed shafts and bronze or babbitt bearings on low speed high torque shafts assure long life dependability.



25 MPH ROAD SPEED

Model 202 with rear dual wheels offers cost-cutting mobility of twenty-five MPH road speed. Eight MPH is recommended speed when unit is equipped with tracks or half tracks. All Badger units are easily transported on 1½ ton truck.

Contractors, municipalities and utility companies are cutting costs and boosting profits with the Badger Trench Excavator. Let the Badger dig for profits for you, too!

Write Today **FOR COMPLETE INFORMATION**

BADGER MACHINE CO.

Dept. J WINONA, MINNESOTA

UNDERPINNING & FOUNDATION INC

Hercules Piles — Caissons — Cofferdams
Arresting of Foundation Settlement
Shafts — Tunnels — Subways — Excavations
Engineering Construction of All Types

NO PROJECT TOO LARGE — NONE TOO SMALL

ENGINEERS & CONTRACTORS
155 East 44th Street New York 17, N. Y.

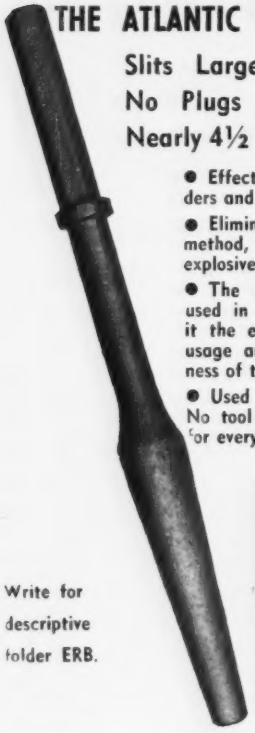
ATLANTIC Pneumatic TOOLS

Use with your standard power pavement equipment . . . .

THE ATLANTIC PNEUMATIC ROCK BREAKER

Slits Large Rocks and Boulders quickly
No Plugs and Feathers — No Explosives
Nearly 4½ times faster

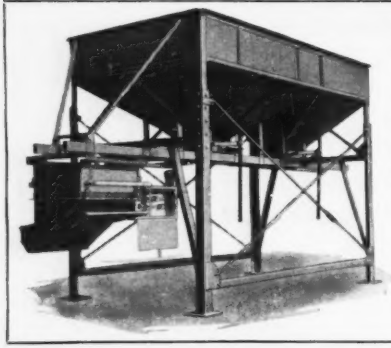
- Effective quick action in removing stones, boulders and rocks from excavations and ditches.
- Eliminates the slow and costly plug and feather method, and the risky and troublesome use of explosives.
- The specially heat-treated Atlantic Tool Steel used in the Atlantic Pneumatic Rock Breaker gives it the extreme toughness to withstand the severest usage and resist breakage regardless of the hardness of the stone.
- Used with standard power pavement breakers. No tool upkeep. Tougher than any stone. A size for every service.



Write for descriptive folder ERB.

Specialists in Tool Steels for chisels, drills, blacksmith tools and Alloy Steels for axles, bolts, pins, pistons and shafts. Non-tempering tool steels for greater safety and speed.

ATLANTIC STEEL CORP. 1775 BROADWAY, N. Y. 19



Winslow BINANBATCH
—Reduces Your Job Cost
Use with a
10S-11S-14S-16S Mixer

Complete—with scale for two or three aggregates.
With two or three overhead storage bins.
For use on culvert—bridge—curbing—foundation jobs.
Wherever above size mixers are in operation

Prompt Delivery - Write or Wire
Mftd. by

WINSLOW SCALE CO.
TERRE HAUTE, IND.
Distributors Located throughout U. S.

N. Y., Binghamton—AIRPORT—at office Howard Davis, clk., Bd. of Supervisors, Broome County Office Bldg., paving and other constr., Broome County Airport. Plans deposit $15. S. P. Carman, Security Mutual Bldg., and Seelye, Stevenson & Value, 101 Park Ave., New York, Zone 17, consult engrs. CD 1/14/47—ENR 2/6/47.

April 19

†**Neb., Lexington** — COMMUNICATION STATION — Civil Aeronautics Administration, City Hall, Kansas City, Mo., interstate airways communication station. CD 3/9/45—ENR 5/17/45.

LOW BIDDERS

Ia., Muscatine—AIRPORT IMPRVS.—City, City Hall airport imprvs., from R. B. Burch, 1718 Park Ave. S. E., Cedar Rapids, $56,132. Stanley Engrg. Co., Muscatine, engrs.

CONTRACTS AWARDED

Ill., Murphysboro — AIRPORT — South Illinois Normal University, Carbondale, class II airport, to Caldwell Engrg. Co., Jacksonville, $203,555. Norman C. Bird, ch. engr., State Dpt. Aeronautics, Capital Airport, Springfield, engr. CD 8/30/44—ENR 9/21/44, under Ill., Carbondale.

FOREIGN

Ceylon—Ministry of Agriculture and Lands, Secretariat, Colombo, Ceylon, receiving bids on or before March 31, constructing Walawe Ganga Dam and power house 17,500 ft. long, 110 ft. high at river bed, concrete spillway controlled by nine 30x40 ft. radial gates and gravity abutment sections in all 875 ft. long and 118 ft. high, power house with 3 No. 3750 k.v.a. generators driven by 4,700 h.p. Francis type turbines for an Irrigation Reservoir-cum-Hydro-Electric Proj. on Walwawe Ganga, located approx. 100 mi. southeast of Colombo.

PUBLIC BUILDINGS

BIDS ASKED

March 22

†**Conn., Ansonia**—Office of the U.S.P. & D.O. Connecticut State Armory, Rm. No. 303, Hartford, motor vehicle storage bldg., Extended date. CD 1/28—ENR 2/3.

†**Conn., Manchester**—Office of the U.S.P. & D.O., Connecticut State Armory, Rm. No. 303 Hartford, constr. motor vehicle storage bldg. Extended date. CD 1/28—ENR 2/3.

†**Conn., West Haven**—Office of U.S.P. & D.O. Connecticut State Armory, Rm. No. 303, Hartford, constr. motor vehicle bldg. Extended date. CD 1/28—ENR 2/3.

S. C., Varnville—Hampton Co., Varnville hospital. Est. $250,000. Extended date. Lafaye, Lafaye & Fair, 1226 Sumter St., Columbia archts. CD 2/17—ENR 3/3.

Que., St. Laurent (P. O. Montreal)—J. J. O'Sullivan engr., 1253 McGill College Ave., 78 duplex dwellings, for Central Mortgage & Housing Corp., 70 Lyon St., Ottawa, Ont., Plans deposit $10.

March 24

Ga., Columbus—City, Columbus, library. Plans deposit $25. Biggers & Lockwood, P. O. Box 34, archts. CD 2/20/48—ENR 3/4/48.

Ia., Onawa—City, City Hall, power plant imprvs., incl. generating equip., switchboard, etc., $85,000. Buell & Winter, 508 Insurance Exchange Bldg., Sioux City, engrs.

N. Y., Long Island City—New York City Housing Auth., 63 Park Row, New York Zone 7, foundations and appurtenances for Ravenswood Houses, Sect. I, Proj. NYC-20 consisting of 17 bldgs. in area bounded by 21 St., 24 Ave., 24 St. and 36 Ave., Queens Boro. Plans deposit $75. Extended date. CD 2/24—ENR 3/3.

March 25

Ala., Mobile—Mobile Bd. School Comrs., c/o J. R. Rutland, archt. 452 Government St., Bayou La Betre School. Plans deposit $25.

Utah, Salt Lake City—State Bldg. Bd., State Capitol, adult center for the blind, $250,000-$300,000. Cannon & Mullen, Templeton Bldg., archts. CD 8/23—ENR 9/2.

Wis., Juneau—Dodge Co., Juneau, home for aged. $525,000. Plans deposit $50. Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, archts. CD 9/7/44—ENR 9/21/44.

Sask., Swift Current—E. H. Rice, Union Hospital, 4 story, concrete, brick hospital for Municipality, $250,000. H. K. Black, 3 Black Bldg., Regina, archt., CD 8/30/45—ENR 9/13/45.

March 28

Calif., Santa Clara—Alum Rock Union School Dist., Santa Clara, 1 story, frame, stucco and park brick veneer, 15 classroom school on Kirk Ave. between Alum Rock Ave. and McKee Rd., $400,000. Plans deposit $50. Kress & Gibson, 515 First Natl. Bank Bldg., archt.

Ky., Frankfort—State, Engrg. & Construction Div., Frankfort, dormitory at Kentucky State College, $300,000.

Now It's Here!

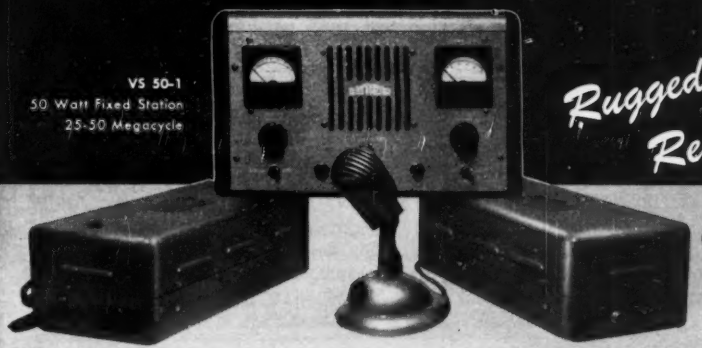
THE COMMUNICATION EQUIPMENT YOU'VE BEEN WAITING FOR...

UM 15-1—152-162 Megacycle (Not Illustrated)
VM 30-1—30 Watt Mobile Station, 25-50 Megacycle

25-50 and 152-162 MEGACYCLES *2 Way*

RAYTHEON RADIOPHONE

VS 50-1
50 Watt Fixed Station
25-50 Megacycle



Rugged... Reduces Costs... Increases Efficiency

COMPARE RAYTHEON'S ADVANTAGES!

NOISE-FREE RECEPTION
COMPACT, OUT OF SIGHT
SIMPLIFIED INSTALLATION

COMPARE RAYTHEON'S PERFORMANCE!

LOW BATTERY DRAIN
LOW MAINTENANCE, LONG LIFE

COMPARE RAYTHEON'S PRICE!

LOWEST PRICE IN THE INDUSTRY
WRITE FOR QUOTATIONS

Our sales engineers will assist you in filing your FCC construction permit at no cost or obligation to you!

RAYTHEON

BELMONT RADIO CORPORATION

A Subsidiary of Raytheon Manufacturing Company
5929 W. DICKENS AVENUE • CHICAGO 39, ILLINOIS

Sold Exclusively in Canada by Canadian Marconi Company, Montreal

MAIL THIS COUPON TODAY!

Belmont Radio Corporation
5929 W. Dickens Avenue, Chicago 39, Illinois

I'd like to have full information and literature on the new 2-way Raytheon Radiophone.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

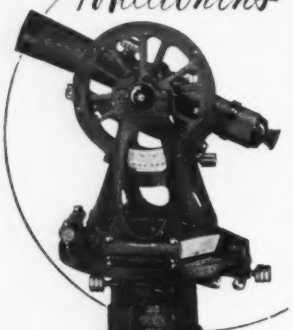
Hi-BOND Re-Bars
Structural Shapes

Reinforcing bars, structurals, plates, sheets, wire mesh, metal lath, bolts, etc. Our engineers co-operate from first plans to finished job. Send blue prints for lump sum or pound quotation. Re-bars cut, bent and delivered as needed, tagged for quick placement. Write for new Hi-Bond Re-Bar Bulletin, showing how to improve work and cut costs.

Joseph T. Ryerson & Son, Inc., New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco.

RYERSON STEEL

MEASURED TO *Millionths*



Each ball bearing utilized in the patented Ball Bearing Base or spindle of a Brunson surveying instrument is electronically measured to match within 10-millionths of one inch. Superior construction assures lasting accuracy.

Precision surveying instruments
Transits, Levels, Rods, Tripods.

LASTING **BRUNSON** ACCURACY

distributed by
CHARLES BRUNING COMPANY, INC.
4754-7 Montrose Ave. • Chicago 41, Ill.

Tex., Plains—Plains Rural High School Dist. 1, Plains, masonry high school and grammar school addn. $250,000. J. C. Berry & Kerr & Kerr, 312-B. W. 10 St., Amarillo, archts.

March 29

Calif., Fresno—Fresno Co., Courthouse, 2 story, 24,000 sq. ft. floor space nurses' home at Fresno County General Hospital, $360,000. Plans deposit $50. Fred L. Swartz & W. G. Hyberg, Rowell Bldg., archt. and F. W. Kellberg, 320 Market St., San Francisco, engr. CD 3/5—ENR 3/10. Extended date.

Ia., Traer—City, City Hall, light plant imprvs., $70,000. E. L. Patera, Royal Union Bldg., Des Moines, engr.

Okla., Lake Murray—State Resources Board, Capitol, Oklahoma City, lodge and 40 cabins, $850,000. Plans deposit $50. Harold E. Flood, Ardmore, archt. CD 12/13/48—ENR 12/23/48.

March 30

Fla., Miami Beach—City Council, C. W. Tomlinson, city clk., Miami Beach, auditorium. L. Murray Dixon, 605 Lincoln Rd., Henry Hohauser, 4011 Chase Ave. and Russell T. Pancoast & Assoc., 927 41 St., all Miami Beach, archts. Plans deposit $50.

N. Y., Flushing—Bd. Higher Educ., Administration Bldg. of Queens College, 65-30 Kissena Blvd., general constr., plumbing and drainage, heating, ventilating and air-conditioning, electrical; elevator and dumbwaiter; lighting fixtures and illuminated signs for various work in connection with Science Bldg. No. 1 for Queens College, Extended date. CD 2/17—ENR 3/3.

April 1

Utah, Roosevelt—Duchesne County School Bd., Roosevelt, constructing Union High School, Fetzer & Fetzer, Templeton Bldg., Salt Lake City, archts.

B. C., Victoria—Victoria School Bd., Victoria, 2 story, concrete, Topaz Ave. High School, $600,000. Birley, Wade & Stockdill, 605 Courtney St., archts. CD 2/28/47—ENR 3/20/47.

April 4

Idaho, Coeur d'Alene—North Idaho Junior College, Coeur d'Alene, 2 story, 61'x176 ft. and 118'x163 ft. brick, auditorium, classroom and gymnasium bldg., $495,000. G. M. Rasque & Son, Washington Trust Bldg., Spokane, Wash. CD 11/17—ENR 12/16, under Commercial Bldgs.

✦**North Dakota**—Bureau Reclamation, Dpt. Interior, Bismarck, furnishing and erecting 9 two bedroom and three 3 bedroom residences for Cannonball Govt. Camp, Spec. RS-BIS-12 (Missouri River Basin Proj. Region 6).

April 5

✦**Colorado and Kansas**—Bureau Reclamation, Dpt. Interior, Region 7, New Customhouse, Denver, Colo., constr. residence, combination garage and testing laboratory, pump house, water supply sys., gas supply sys., sewage disposal sys., driveway, parking area and side-walks for Government Field Construction Facilities at Bonny Dam, St Francis Unit, Upper Republican Div., Spec. VII-55 (Region 7, Missouri River Basin Proj., L. N. McClellan, ch. engr.

✦**D. C., Wash.**—U. S. Eng., First and Douglas Sts. N. W., Wash., Zone 25, neuropsychiatric ward alterations, Army Medical Center, Walter Reed General Hospital, Serial No. 49-080-49-123 (28)M.

✦**Alaska, Palmer**—U. S. Dpt. of Agriculture, 14 St. and Independence Ave., S. W. Wash. 25, D. C., research laboratory at agriculture experiment station, U.S.D.A. No. 1944-49.

April 6

●**N. Y., Binghamton**—Bureau Contracts and Accounts, Albany, 780 bed Medical-Surgical bldg. at State Hospital. $2,500,000. CD 7/11/46—ENR 7/26/45.

April 7

✦**Ohio**—U. S. Eng., 925 New Federal Bldg., Pittsburgh, Pa., damtenderers dwellings and appurtenant work, Berlin Dam, Portage Co. Serial No. Eng-36-958-49-106.

April 8

Colo., Ft. Morgan—School Dist. No. 3, Ft. Morgan, Junior-Senior High School addn., $550,000. John K. Monroe, 40 Security Bldg., Denver, archt. CD 6/22—ENR 6/24.

Ont., Toronto—Housing Authority of Toronto, 465 Bay St., Regent Park Housing, incl. Unit 3, 2 story, bsmnt., 131x239 ft. H-shaped, brick bldg., and Unit 4, 100x100 ft. L-shaped, 8 family unit. Approx. $540,000. J. E. Hoore Jr., 481 Eglinton Ave. W., archt.

April 12

N. Y., New York—Supt. School Buildings, Design and Construction, 49 Flatbush Ave. extens., Brooklyn Zone 1, general constr. P. S. 33, 26 St. and 9 Ave. CD 1/29/43—ENR 2/4/43.

Tex., College Station—Agricultural & Mechanical College of Texas, College Station, 10,000 sq. ft. steel frame, concrete block cattle barn. Unit No. 1, $75,000. Carlton W. Adams, 223 Administration Bldg., College Station, A. & M. College System Archt. CD 10/6—ENR 10/28.

April 14

Wyo., Torrington—Goshen County Hospital, Torrington 1 story bsmnt., 145x234 ft. brick, concrete, glass block hospital. Over $250,000. Goodrich & Wilking, 266 E. 2nd St., Casper, engr. and archt. CD 4/29—ENR5/13.

BIDS ASKED

Wash., Longview—School Bd., Longview, Broadway school addn. $250,000. CD 4/9/44

LOW BIDDERS

●**Ala., Birmingham**—City, City Hall, **Mar. 8**, City Hall, from J. A. Jones Constr. Co., Walton Bldg., Atlanta, Ga., **$1,982,200** est. **$2,500,000** CD 2/7—ENR 2/10.

Calif., Pasadena — Tournament of Roses Assoc., City Hall, Feb. 28, 9,000 seat rein.-con Rose Bowl Addn., from The Hermanson Co., 417 S. Hill St., Los Angeles, **$316,672**, est. $400,000. Hunt, Chambers & Ware, 124 W. 4 St., Los Angeles, archts. and engrs.

Calif., Santa Barbara—Santa Barbara High School Dist., 1235 Chapala St., Mar. 1, 2 story, bsmnt., 100x146 ft., rein.-con. gymnasium, from J. W. Baily Constr. Co., 214 Balboa Blvd., **$328,984**, est. $300,000. Seule & Murphy, 116 E. Sala St., archt. and Hillman & Nowell, 816 W. 5 St., Los Angeles, engr. CD 2/10—ENR 2/17.

●**Calif., Visalia**—Visalia Union High School Dist., Visalia, Mar. 1, steel frame, concrete walls high school from Ted Merrill, 911 E Redondo Blvd., Inglewood, **$1,478,000**. Est $2,500,000. H. L. Gogerty, 3123 W. 8 St., Los Angeles, archt. CD 2/14—ENR 10/30/47

Idaho, Boise—School Bd., Boise, Mar. 7, 2 story rein.-con., Junior high school addn., from J. O. Jordan & Sons, Boise, **$341,220**. Est. $300,000. CD 2/28.

Ill., Crystal Lake—Bd. Educ., Dist. 247 City Hall, Mar. 3, 2 story, 130x140 ft. brick, stone, concrete grade school from Peter Hamlin Constr. Co., 9 S. Clinton St., Chicago. Over **$300,000**. CD 2/23.

Ill., Mount Vernon—School Dist. No. 80, Mount Vernon, 1 story, L-shaped masonry, steel Field Grade School, masonry, steel Franklin Grade School from J. L. Simmons Co., Inc., 2146 N. Woodford St., Decatur. **$533,533.** McCoy & Wilson, 1108¾ Main St. archts. CD 5/28/47—ENR 6/12/47.

●**Ia., Iowa City**—State Bd. Educ., Des Moines, Feb. 24, general contract library at University of Iowa, from Weitz Co., Inc., 406 Fleming Bldg., Des Moines, **$1,108,130**, physical plant shop, from Kuchaco & Assoc., 225 Jewett Bldg. Des Moines **$165,890.** CD 2/9—ENR 2/17.

Minn., St. Peter—State Dpt. Admin., State Capitol, St. Paul, Feb. 28, boiler, power plant alterations and addns., State Hospital, from Commonwealth Electric Co., 417 Broadway, St. Paul, **$93,806**; piping from Pioneer Power Sales Inc., 1955 University Ave., St. Paul, **$88,819.** CD 2/9—ENR 2/17.

●**N. Y., Brooklyn**—New York City Housing Auth., 63 Park Row, New York Zone 7, Mar. 8, foundations, appurtenances for Boulevard Houses, Proj. No. NYC-16 in area bounded by Linden Blvd., Ashford St., Wortman Ave., Hendrix St., Stanley and Schenck Aves from Horn Constr. Co., 291 Broadway, New York Zone 7, **$1,083,828.** CD 2/7—ENR 2/17.

●**N. Y., Poughkeepsie**—Bureau Contracts & Accounts, Albany, Mar. 9, General Constr., 800 bed Medical and Surgical bldg. at Hudson River State Hospital from Merritt-Chapman & Scott Corp., 17 Battery Pl., New York, **$6,538,931***** heating from Whitney Dierks Heating Corp. Poughkeepsie, **$531,300***** sanitary work from Novak & Rehner, Inc., 623 10 Ave., New York, **$519,214***** electrical from Kaplan Electric Co., 128 E. 16 St., New York, **$388,974.** CD 2/4—ENR 2/10.

●**N. Y., Schenectady** — Municipal Housing Auth., 402 Millard St., Feb. 15, general contract, Housing Proj. NYS-34, East Van Vranken Ave., from John A. Johnson & Sons, Inc., 270, 41st St., Brooklyn, Zone 32, **$1,654,000.** CD 1/12—ENR 1/20.

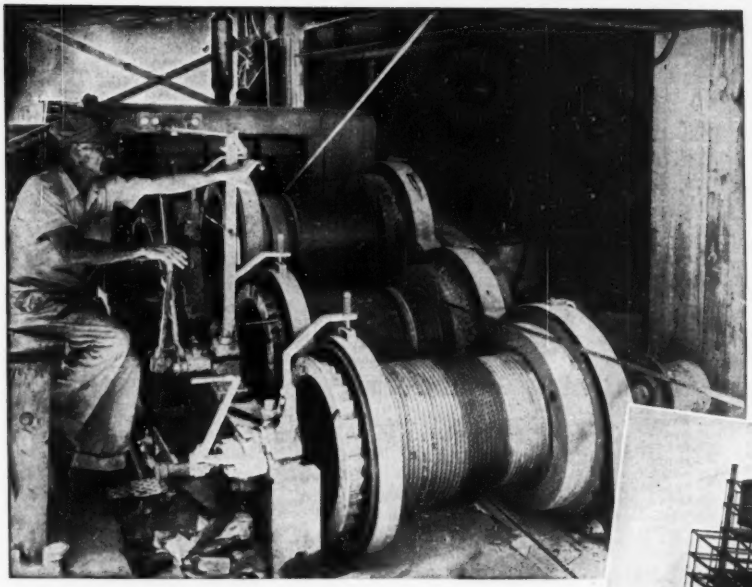
Okla., Durant—Bd. Affairs, Capitol, Oklahoma City, machine shop and home economics bldg. at Southwestern State College from Charles T. Hughes, 1808 Linwood St., Oklahoma City, **$165,628.** Est. $155,000. CD 12/12/47—ENR 12/25/47.

✦**Oregon** — Bonneville Power Admin., 729 N. E. Oregon St., Portland, project indefinitely postponed, constructing Wauton substation. Inv. 4499, Lane Co. CD 2/24.

Pa., Phila.—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, Mar. 9, general constr., boiler plant for female group at Philadelphia (Byberry) State Hospital from Wark & Co., 1700 Sansom St., **$488,770***** mechanical equip. and piping from Ambrose-Augustserfer Corp., 247 E. Ashmead St., Zone 44, **$310,000.** CD 2/14—ENR 2/24.

●**Pa., Phila.**—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, Mar. 9, general constr. Building No. N-9, Maximum Security Bldg. for male patients at Phila. (Byberry) State Hospital from Wark & Co., 1700 Sansom St., **$1,497,770.** CD 2/1—ENR 2/10.

Va., Alexandria—Bd. Educ., Supt. of Schools, City Hall, Mar. 4, Charles Barrett School from Eugene Simpson & Brother, 2 W. Walnut St., **$406,996.** CD 2/21—ENR 2/24.



Clyde Gasoline Hoists . . .
. . . for those Big Jobs!

Clyde quality equipment on your job means progress assurance at all times. Clyde hoists are husky machines, built to work and keep on working under the most severe conditions.

Every part is carefully engineered for its particular duty . . . every piece is accurately made to provide easy operation, low cost maintenance and safe and dependable performance.

Clyde gasoline hoists are available in one, two and three drum sizes with line pulls from 1,500 lbs. to 30,000 lbs.

Special bulletins giving complete specifications and construction details are available on Clyde GASOLINE HOISTS . . . ELECTRIC HOISTS . . . STEAM HOISTS . . . WHIRLEYS . . . CAR PULLERS . . . BUILDERS TOWERS . . . DERRICKS . . . ROLLERS . . . HAND POWERS.

Another important addition to progressive Dallas, Texas is the M and W Tower. This new 22 story office building has a Clyde three drum gasoline hoist to handle materials and supplies. One drum handles a concrete bucket, another drum operates a material elevator while the third drum is used for a Chicago. A 10,000 lb. line pull at 235 f.p.m. provides fast and efficient service.

CLYDE

CLYDE IRON WORKS, Inc.

Duluth 1, Minnesota

A SUBSIDIARY OF Barium STEEL CORPORATION Steel right to the horse

HYPRESSURE JENNY CLEANS

by a highly atomized mixture of steam, hot water and cleaning compound applied under pressure through an adjustable spray gun. Mud, muck and grease are removed almost instantly. Hypressure Jenny is portable ... easy and economical to use. Ordinary labor can operate it. Full-powered, all-purpose, heavy-duty models are available from $445.00 to $595.00.

Hypressure Jenny cleans all types of construction equipment . . . *10 times faster than it can be done by hand.*

Here's what some other construction equipment users say about Hypressure Jenny steam cleaning:

"We save $25.00 on each piece of equipment we clean with Hypressure Jenny."

"Hypressure Jenny steam cleaning helps us locate fractures and trouble on bulldozers before they break down."

"One man with Hypressure Jenny can clean equipment in one hour that formerly required 18 hours to clean by hand."

Wire or write for full information. No obligation.

HYPRESSURE JENNY DIVISION
HOMESTEAD VALVE MANUFACTURING COMPANY
P. O. Box 31 "Serving Since 1892" Coraopolis, Pa.

GLUED LAMINATED ARCHES

PRE-FORMED WRAPPED Ready to INSTALL

Timber Structures' glued laminated arches and other structural forms offer unlimited variety of building types. Moulded to specifications, pre-cut and ready to install—these structural wood arches present the utmost in economy, strength and utility. Before you plan your next church, auditorium or other clear span building, check the possibilities of glued laminated structural forms. Consultations to engineers and builders through our Engineering Department.

TIMBER STRUCTURES INCORPORATED
WASH. MAYER

P. O. Box 3782
PORTLAND 8, OREGON
Offices: New York, Chicago, San Francisco, Seattle, Spokane

FORMULA NO. 640

A clear liquid for waterproofing concrete, concrete blocks, stone, cast stone, brick, stucco, tile, plaster, wood, etc.

PENETRATES deeply, is not a surface treatment.

WATERPROOFS, preserves, prevents dusting of floors, surface dirt washes away in rain.

ACID & ALKALI protection.

PRIMER for OIL PAINT.

WATERPROOFS cement paints.

OUTSIDE OR INSIDE, equally effective.

HYDROSTATIC pressure up to 20' held.

ECONOMICAL: comes ready to use, applied three times as fast as paint. No furring, no membraning required. Moderate price.

TECHNICAL LITERATURE, office test kit, or larger sample for a field test on request.

Note: Formula No. 640 contains no paraffin, no silicate, no stearate, no linseed oil or oil of any kind.

OTHER PRODUCTS: Formula No. 640 Toxic, a combined waterproofing and termite and fungus control; cement hardener; roof coatings; floor mastics, etc.

HAYNES PRODUCTS CO.
4007 Farnam Street
Omaha 3, Nebraska

CONTRACTS AWARDED

Calif., Alhambra—Alhambra City School Dist., 601 N. Garfield St., 6 frame and stucco bldgs. at William Northrop Elementary School, to V. O. Brunzell Co., 14715 LaSalle Ave., Gardena, **$388,411.** Clarence H. Rawlings, 100 S. 1 St., Alhambra, archts. CD 2/19—ENR 3/4.

●**Calif., Culver City**—Culver City School Dist., 3955 Van Buren Rd., Farragut Dr. Elementary School and Farragut Dr. Intermediate School, to Burnzell Constr. Co., 3944 Higuera St., Culver City, **$1,110,513,** est. $1,250,000. Bids 2/24, awarded 3/3. CD 2/10—ENR 2/17.

Conn., Stamford—City Housing Auth., 54 Putnam Ave., fifty-four 2 story, bsmnt., frame family unit garden apartments Dale St., to F. D. Rich Co., Inc., 322 Main St., **$432,000.** CD 12/18—ENR 1/1.

Ill., Chicago—Chicago Transit Authority, 175 W. Jackson St., brick bus terminal, **1239-53** W. 103 St., to Joseph J. Duffy Co., 176 W. Adams St., **$856,324.** Battery & Childs, 231 S. LaSalle St., engrs. Bids 1/11. Awarded 3/3. CD 1/20—ENR 1/27.

●**Ill., DeKalb**—Illinois Dpt. P. Wks., Springfield, rein.-con. stone, brick womens dormitory, Northern Illinois State Teachers College, to Federal Constr. Inc., 30 N. Dearborn St., Chicago, **$1,500,000.** C. Herrick Hammond state archt. CD 2/14/45—ENR 3/3/45.

Ill., Glen Ellyn—Bd. Educ., Glen Ellyn, 2 story, 40x126 ft. brick, concrete Main Elementary school addn., to Henry Pfaffenreuter & Sons, 53 W. Jackson St., Chicago, **$250,000** Bids 2/25. CD 2/8—ENR 2/10.

●†**Ind., Indianapolis**—Veterans Admin., Vermont Ave., between H and I Sts., N. W. Wash., 25, D. C., hospital and quarters to Gust K. Newberg Const. Co., 115 and New York Sts., Whiting, Ind., **$7,684,000.** CD 2/7—ENR 2/17.

Neb., Red Cloud—City, City Hall, power plant imprvs., incl. building alterations, generating equip. to Fairbanks-Morse & Co., 9 and Harney Sts., Omaha, **$90,095.** Est. $126,700. Bids 2/24. CD 2/10—ENR 2/17.

Tex., San Antonio—City Public Service Board, 201 N. St. Marys St., reconstructing Comal-Grandview Electric Power sub-station, force-account. Approx. **$200,000.** CD 7/31/47—ENR 8/21/47.

Utah, Midvale—Jordan School Dist., Sandy, general contract Midvale grade school to Talbise & Harlin Co., P. O. Box 411, Provo, **$119,712.** Bids 2/3. CD 2/16.

Alta., Lethbridge—Municipality, 42x70 ft. concrete boiler house, to Bird Constr. Co. Ltd., 14 Third Ave., Lethbridge. Est. **$90,000** Townley & Matheson, 1376 Hornsby St., Vancouver, archt.

B. C., Vancouver—Vancouver School Bd., 590 Hamilton St., John Oliver High School addn., to Smith Bros. & Wilson Ltd., 1... Richards St., **$965,735.** Bids 2/7. Awarded 3/5. CD 2/21—ENR 3/3.

Ont., Toronto—Scarborough Collegiate School Bd., Kingston Rds. and St. Clair Ave. E., 2 story, bsmnt., 48x275 ft. brick, stone, steel, concrete Scarborough Collegiate addn., to Bennett-Pratt, Ltd., 30 Bloor St. W. Approx. **$350,000.** Carter & Coleman, 60 Front St. W., archts.

Que., Drummondville—Municipality, 2 story, 85x214 ft. concrete, steel, brick garage and market to B. Robidas, 164 du Moulin, **$194,350.** Est. $300,000. Bids 2/14, CD 3/2—ENR 3/10, under LB.

Que., Quebec City—Giffard School Comm., A. Grenier, chn., G. Gergardin, secy., girls school, Renouard and Guimored Aves., to Capitanel Constr. Co., 490 Notre Dame St. Cap de la Madeleine. Approx. **$416,000.** E. R. Talbot, 59 Vieux-Moulin, archt.

Que., St. Laurent (Postal Dist. Montreal)—Central Mortgage & Housing Corp., 1253 McGill College Ave., Montreal, and 70 Lyon St., Ottawa, Ont., 85 duplex houses, **Monkland** Blvd., to L. B. Magill Co. Ltd., 4720 Ridgeway St., Montreal, **$500,000.** J. J. O'Sullivan, 1253 McGill College Ave., Montreal, engr. Bids 2/17. CD 2/1—ENR 2/3.

COMMERCIAL BUILDINGS

BIDS ASKED

March 21

B. C. Vancouver—Mercer & Mercer archts., 615 W. Hastings St., 2 story, 100x122 ft. steel, rein.-con. bldg., for The Salvation Army, $250,000.

April 15

Ind., Anderson—Anderson Apartments, Inc., Pick Hotels Corp., 26 N. Wacker Dr., Chicago, Ill., 12 story, 60x72 ft. stone, brick, rein.-con. stores, offices, and apartments, conversion from hotel $300,000. Plans deposit $25. Allen & Kelly, 435 Architects & Builders Bldg., Indianapolis, archts., Harry Greenwood, c/o owner, consult. engr. CD 11/11—ENR 12/16.

About May 1

Ia., Corning—Rosary Hospital, Corning, 3 story, 42x120 ft. concrete, brick hospital, $400,000. Wetherell & Harrison, Shops Bldg., Des Moines, archts. CD 2/18—ENR 2/21.

Fla., Tallahassee—State Bank, c/o Prentiss Huddleston & Assoc., archts., 212 N. Adams St., soon lets contract, bank.

Ill., Chicago — St. Monica Parish, c/o Pirola & Erbach, archts., 221 N LaSalle St., 1 story, 125x160 ft. brick, concrete, stone, T-shaped school and church.

●Tex., Dallas—Herman Loupot, c/o Westmoreland Village, 203 N. Burnet St., shopping center, 10 acre tract in Oak Cliff, **$800,000**; commercial units, Fort Worth Hy. **$350,000.** Leinbach Bros., 600½ E. Jefferson St., archts., Koch & Fowler, Gr. Natl. Life Bldg., engrs. CD 3/3—ENR 3/17.

SOON LETS CONTRACT

Ill., Skokie—College Hill School, Forestview and Davis Sts., soon lets contract 1 story brick school addn., $350,000. Plans deposit $10, Alfred P. Allen, 225 N. Michigan St., Chicago, archt.

Minn., Minneapolis — Minnesota District, Luthern Missouri Synod, 402 Loring Medical Bldg., soon lets contract student center, 11 Ave. S.E. and University Ave. Extended date. CD 3/3—ENR 3/10.

Pa., Media — Roman Catholic Church of the Nativity, B.V.M. 30 E. Franklin St., soon lets contract school and auditorium. **$250,000.** G. C. Freeman, 419 Corsonia Ave., Pennside, Reading, archt.

Ala., Birmingham — First Nazarene Church c/o Van Keuren Davis & Co., American Life Bldg., soon lets contract 2 story church addns., alterations.

Ala., Birmingham — Vanderbilt Garden Apartments, Inc., c/o Pembleton & Mims, Title Guarantee Bldg., soon lets contract 118 apartments units. Over $300,000.

N. J., Trenton — Greenwood Village Corp., 350, 5 Ave., New York, N. Y., apartment development, Massachusetts Ave. $250,000. Isadore Naftali, 312 High St., Newark, archt.

Tenn., Memphis — F. W. Woolworth Co., c/o Hanker & Heyer, archts., Commerce Title Bldg., soon lets contract department store.

N. Y., New York — Missionary Sisters of the Sacred Heart, 227 E. 19th St., Columbus Hospital, soon lets contract alterations and addns. $400,000. Anthony J. DePace, 151 W. 46 St., Zone 19, archt. CD 10/15/47—ENR 10/23/47.

Pa., New Bloomfield — William H. Lee, archt., 16 S. Broad St., Phila., soon lets contract senior dormitory for Carson Long Institute, New Bloomfield, **$250,000.** CD 12/6/45—ENR 2/21/46.

Pa., Norristown — Bell Telephone Co. of Penna., 1401 Arch St., Phila., soon lets contract central exchange addn. **$460,000.** Zantzinger & Borie, 1531 Locust St., Phila., archts. Frank N. Kneas, 504 Woodland Terrace, Phila., engr. CD 2/21—ENR 3/10.

LOW BIDDERS

Calif., Hanford—L. H. Lipman, owner, c/o Sears, Roebuck & Co., lessee, 216 W. 17 St. 2 story, rein.-con. department store, from L. H. Hansen & Sons, 313 Palm Ave., Fresno, **$383,564.** CD 1/27—ENR 2/3.

N. Y., Elmira—Robert Turner Bickford, archt., 215 W. Water St., rejected bids Feb. 15, 2 and 3 story 60x158 ft. academic bldg.; 1 story 29x33 ft. boiler house, brick, stone for Elmira College, College Ave. CD 1/17—ENR 1/27.

S. C., Charleston — Grecian Society, c/o Augustus E. Constantine, archt., 139 Calhoun St., church from Skinner & Kuddock, Inc., 18 State St., **$288,865.** CD 2/7—ENR 2/17.

Tex., Dallas—Wynnewood Development Co., 2311 Salerno St., Feb. 25, masonry frame, brick 12 store shopping village, Bldg. 1, from Inwood Constr. Co., 5151 Northwest Hy., **$251,000.** CD 2/16—ENR 2/24.

CONTRACTS AWARDED

Ala., Montgomery — Gulf Area Constr. Co., Caroline St., Montgomery, apartment house, Owner builds, **$250,000.**

Calif., Los Angeles — Roman Catholic Archbishop, 714 W Olympic Blvd., 2 story, bamnt., 40x163 ft., brick rein.-con. Our Lady of Loretto High School, to J. A. McNeil Co., Inc., 718 W. Olympic Blvd., Los Angeles, **$550,000.** George Adams, 2439 Hyperion Ave., archt. CD 2/2—ENR 2/17.

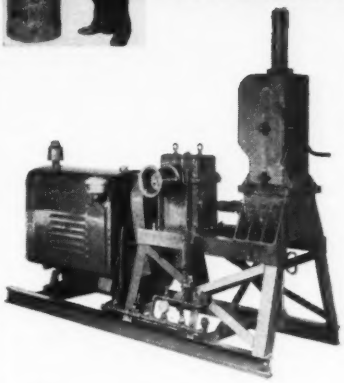
Calif., Los Angeles—Bultry Corp., 9700 W. Pico Blvd., 90 frame, stucco dwellings to Allied Contractors, 9700 Pico Blvd., Los Angeles, Est. **$482,000.**

●Calif., Los Angeles—Mutual Housing Assoc., 826 N. Robertson Blvd., 197 dwellings in Keuter Canyon, to Shumaker-Evans Constr. Co., 6631 E. 26 St., Los Angeles and Womak Constr. Co., 1712 S. Central Ave., Phoenix, Ariz., **$2,100,000,** est. $2,000,000. Bids 3/2. CD 2/15—ENR 2/17.

Conn., Manchester — Alexander Jarvis Co., 6 Dover St., fifty 1½ story 6 room, frame dwelling units, Olsott St. Exten., Owner builds, **$450,000.**

Conn., New Haven — Connecticut State Medical Society, 258 Church St., 3 story, brick, steel, concrete Medical Administration Bldg., St. Ronan and Edwards Sts., to E. & F. Constr. Co., 94 Wells St., Bridgeport. Est. **$250,000.** CD 12/14. CD 2/16—ENR 2/24.

RUGGED EQUIPMENT FOR BIG HOLES AND BIG CORES



ACKER "KR" CORE DRILL

DESIGNED for heavy duty shot core drilling, the Acker Model KR Drill combines in one compact unit the benfits of thirty year's experience with the use of modern alloys and design features—Timken Bearing equipped—oversizes heat treated and case hardened alloy steel drive gears—special chrome nickel alloy steel spindle—drills holes up to 24" in diameter in masonry on solid rock—many satisfied users in this country and throughout the world report faster drilling speeds and lower operating costs—gasoline, kerosene, diesel or electric motor drive.

For full information

Write Department S-1 for full details of Acker Shot and Diamond Core Drills, drill supplies and earth sampling devices.

ACKER DRILL COMPANY, INC.
SCRANTON 3, PA.

DREDGES

HYDRAULIC
● DIPPER ●
CLAMSHELL

Bolted sectional steel hulls for landlocked, inland waters
If you need a dredge, write us!

AMERICAN STEEL DREDGE CO. INC.
FORT WAYNE 1 · INDIANA · U.S.A.

DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

EPPINGER AND RUSSELL CO.
Wood Preservers Since 1878
80 Eighth Ave., New York 11, N. Y.

PRESSURE TREATED TIES—POLES—PILING—LUMBER
WITH
Creosote or Chromated Zinc Chloride
TREATING PLANTS
Jacksonville, Fla. Norfolk, Va.
Eddington, Pa

15,000 V.P.M. IN CONCRETE

FLEXIBLE SHAFT SPEED ONLY 3,600 R.P.M.

This amazing step-up in frequency of the vibrator head is made possible by a patented, non-eccentric rotor device found only in Vibro-Plus vibrators.

30% HIGHER FREQUENCY

- save 500% on labor
- save as much as a bag of cement per cubic yard.
- concrete of uniform strength and density

LOW SPEED FLEXIBLE SHAFT

- less mechanical wear and tear
- longer unit life

No time is lost for periodic stripping down. The flexible shaft can be lubricated in less than 20 seconds. THE VIBRATOR HEAD RUNS DRY.

Vibro-Plus is designed and built for long, uninterrupted work periods

Write for technical booklet giving information of profitable interest to everyone associated with concrete construction.

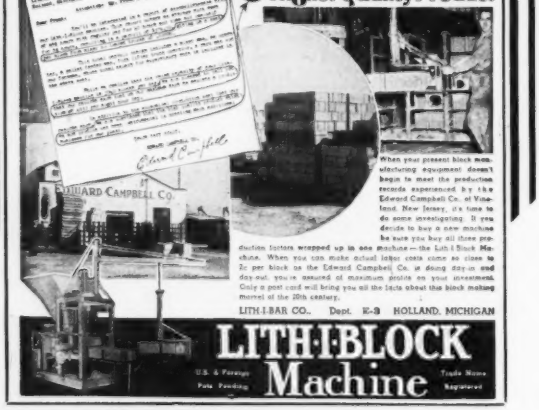
VIBRO-PLUS CORPORATION
243 W. 55th St., N. Y. C.

A few choice territories available for distributors

With LITH-I-BLOCK

And ONLY Lith-i-Block You Get All Three

① Lower Production Cost
② Maximum Production
③ Higher Quality Product



When your present block manufacturing equipment doesn't begin to meet the production records experienced by the Edward Campbell Co. at Vineland, New Jersey, it's time to do some investigating. If you decide to buy a new machine be sure you buy all three production factors wrapped up in one machine—the Lith-I-Block Machine. When you can make actual labor costs come as close to 1c per block as the Edward Campbell Co. is doing day-in and day-out, you're assured of maximum profits on your investment. Only a post card will bring you all the facts about this block making marvel of the 20th century.

LITH-I-BAR CO., Dept. E-9 HOLLAND, MICHIGAN

LITH-I-BLOCK Machine

U.S. & Foreign Pats. Pending — Trade Name Registered

Del., Wilmington—John V. Ryan, Jr., Mayview Manor, New Castle residential development Mayview Manor, separate contract $300,000.

Del., Wilmington—Schnitzer-Harad Constr. Co., Marshallton, residential development Pine St., separate contracts, $250,000.

Fla., Miami—R. & M. Corp., c/o Walter Robinson Shiner, archt., office. Owner builds. Over $300,000. CD 2/18—ENR 3/10.

Fla., North Miami—Lamor Co., c/o contractor, several residential developments, to De Meo Constr. Co., 11731 N. W. 2 Ave., Miami. Est. over $250,000.

●Ill., Chicago—F. W. Woolworth Co., 211 S. State St., 100x145 ft. store and alterations to Henry Ericsson Co., 228 N. LaSalle St. Est. $1,650,000 and $350,000. Shaw Metz & Dolio, 208 S. LaSalle St., archt.

Ind., Terre Haute—Ohio Oil Co., A. L. Henderson, dist. mgr., Marshall, Ill., 2½ story, 48x120 ft. and 47x59 ft. wing, office to Wm. P. Jungclaus Co., 825 Massachusetts Ave., Indianapolis. $300,000. CD 2/21—ENR 3/10.

Ky., Lexington—College of the Bible, 441 W. 2 St., Boaworth Memorial library, administration and classroom bldg., chapel, to R. D. Short Co., 726 W. Main St., Lexington. $483,321. Bids 2/28. Awarded 3/8. CD 3/17—ENR 2/24.

La., Bossier City—F. O. Gilbert, Bossier City, 65 homes. Owner builds. Over $250,000.

Md., Baltimore—Ralph W. Simmers, 2036 E. Belvedere Ave., fourteen 1 and 2 story brick residences, 5705-31 Willowton Ave.; one 1 story, brick, residence, 2015 Ramblewood Rd.; seven 2 story, brick residences, 1914-27 Crestview Rd.; five 2 story, brick, residences 1922-30 E. Belvedere Ave.; twelve 2 story brick residences, 5702-24 Willowton Ave., separate contracts. $359,000. CD 1/26—ENR 2/17.

●Minn., St. Paul—St. Paul Fire & Marine Insurance Co., 111 W. 5 St., general contract, 4 story, 110x146 ft. rein.-con. brick, steel office 126-134 W. 4 St., to W. Baumeister Constr. Co., 635 Hamm Bldg., $1,200,000. CD 4/13—ENR 4/29.

Neb., Omaha—Slosburg Realty Co., 878 Brandeis Theatre Bldg., apartment, 45 and Chicago Sts., Owner builds. $250,000. O. T. Bowles, 4532 Hickory St., archt.

N. J., Clayton — Frank Stinici, Box 311, Clayton, residential development, separate contracts. $700,000. Dante D'Anastasio, 2010 Horner Ave., Pennsauken, archt.

●N. J., Collingswood — Sylvester A. Lowery, 1716 W. Cheltenham Ave., Phila., Pa., apartment development, Collings Rd. and White Horse pike to E. J. Frankel, 1325 Walnut St., Phila., Pa., $10,000,000. CD 2/18—ENR 2/24.

N. J., Paulsboro—Tri-State Homes Inc., Municipal Airport, Millville, residential development, Lincoln Ave. etc., separate contracts. $250,000.

N. J., Pennsauken—Englewood Homes Inc., 506 Dwight Ave., West Collingswood, residential development, separate contracts. $250,000. Arthur B. Gill, 111 N. 4 St., Camden, archt.

N. J., Pitman—Frank Stinici, Box 311, Clayton, residential development, separate contracts. $250,000. Dante D'Anastasio, 2010 Horner Ave., Pennsauken, archt.

N. J., Woodbury—Harry Spiegel, 1512 Walnut St., Phila., Pa., residential development Barber Ave., separate contracts. $250,000. Dante D'Anastasio, 201 Horner Ave., Pennsauken, archt.

N. J., Woodbury—Dr. Henry Spiegel, 40 S. American St., residential development, E. Barber or Hemlock Terrace and Griscom Dr. to Tait & Tait, 104 Oak Ave., Westville. $250,000. Dante D'Anastasio, 2010 Horner Ave. Pennsauken, archt.

Pa., Ambler—William F. Roth, Jr., 110 Terminal Ave., Erdenheim, residential development, Tennis Ave., etc., separate contracts $250,000.

Pa., Canonsburg—Hutchinson Hall, Inc., 40 Murdock St., three 39 x 133 ft. brick veneer apartments, steel or wood joist floor and roof constr. to Hardy & Rankin, 40 Murdock St., Est. $250,000. Phillip Friedman, 121 S. Negley Ave., Pittsburgh, archt.

Pa., Darby—Penn Fruit Co., 1919 Chestnut St., Phila., super market to United Bldg. Constr. Co., 845 N. 19 St., Phila., $330,000. David Supowitz, 246 S. 15 St., Phila., archt.

Pa., Downingtown—Leon Gabel, 273 Highland Ave., residential development, Highland Ave. etc., separate contracts. $250,000.

●Pa., Grove City—Grove City College, Grove City, two, 4 story, bsmnt, 40 x 200 ft. brick dormitories, concrete floor, steel joist floor and roof constr. to Montgomery Constr. Co., 881 W. Main St., Est. $1,200,000. Bids 2/1. CD 1/25—ENR 1/27.

Pa., Lansdale—St. Stanislaus R. C. Church E. Main St., high school, separate contracts $250,000.

Pa., Phila.—Cutler Constr. Co., 1615 Chelten Ave., residential development, Fanshawe St. separate contracts. $550,000.

Pa., Phila.—Carl Metz, 8014 Ogontz Ave., residential developments. Eastwood and Englewood Sts., $450,000; Forrest Ave. $404,000, separate contracts.

VITRIFIED CLAY PIPE
HELPS SET NEW HOSPITAL STANDARDS

THE $770,000,000 hospital program being undertaken by the Corps of Engineers for the Veterans Administration is reaching new heights in hospital standards. These new standards are recognizable mainly in the vast array of facilities for both medical and psychiatric treatment . . . in the use of all of the known science and arts for returning a high percentage of the disabled to useful and self-respecting living.

These new standards are also reflected in modern designed-for-tomorrow buildings. Into these architectural masterpieces are going the world's finest construction materials.

Engineers on these projects recognize the vital importance of top-quality workmanship and materials *below* ground as well as above. That's why there is so much insistence on Vitrified Clay Pipe for sewerage and drainage lines. For Vitrified Clay Pipe is the only pipe impervious to the action of acids . . . chemicals . . . alkalies . . . rust . . . corrosion . . . disintegration.

This high resistance factor of Vitrified Clay Pipe gets a special vote of confidence from hospital designers. The pipe they specify *must* handle safely the acid and chemical wastes of hospital laboratories and facilities!

More than a mile and a half of Vitrified Clay Pipe is being used for the exterior sanitary and storm sewers of the 475-bed Veterans Administration Hospital being constructed at Wilkes-Barre, Pennsylvania. KELLY & GRUZEN, New York City architectural-engineering firm, is in charge of the project.

Conduct your own "Gallup Poll." Ask your friends — any men in the field — if they have ever heard of *a single instance where Vitrified Clay Pipe has ever worn out!* Their answers will speak for themselves.

IF you need specific information on a Clay Pipe problem, write the details to the office nearest you.

NATIONAL CLAY PIPE MANUFACTURERS, INC.

111 W. Washington St., Chicago 2, Ill.
522 First National Bank Bldg., Atlanta 3, Ga.
703 Ninth and Hill Bldg., Los Angeles 15, Calif.
1105 Huntington Bank Bldg., Columbus 15, O.

C-148-2

Vitrified
CLAY PIPE

How to estimate construction costs
—quickly!
—accurately!

Revised 2nd Edition

Meets all estimating problems with complete data and modern methods. A valuable tool for the contractor, architect and engineer.

CONSTRUCTION ESTIMATES and COSTS

By H. E. PULVER

Civil and Structural Engineer

653 pages, scores of tables and diagrams

$6.00

Thorough, systematic presentation

The book gives step-by-step instructions for estimating construction work of all kinds, including excavations, all parts of buildings, concrete, structural steel, and material transportation, profit, overhead, etc. These, combined with useful tables, diagrams and illustrative estimates, make this a complete manual of estimating for the contractor and engineer.

All these practical helps

Estimating by simple arithmetical methods—covers all steps; investigation, approximate estimate, complete detailed estimate—includes such elements as plumbing, waterproofing, electrical, heating and air conditioning—many illustrative, worked-out estimates of typical jobs—now fully revised in line with upward trend of wages and prices—a working guide for the beginner—a key to safer bids, better profits for all estimators.

10 DAYS' FREE TRIAL

McGraw-Hill Book Co., Inc., 330 W. 42nd Street, NYC 18
Send me Pulver's CONSTRUCTION ESTIMATES AND COSTS for 10 days' examination on approval. In 10 days I will remit $6.00 plus few cents postage, or return book postpaid.*

Name .....

Address .....

City and State .....

Company .....

Position NR-3-17-49

***SAVE:** We pay mailing costs if you send cash with order. Same return privilege.

Pa., West Chester—New Type Homes, Inc., 234 W. Market St.,residential development, Marshall Square Manor, separate contracts. $500,000. Corcoran & Mills, 234 W. Market St., archts.

Tenn., Clarksville — Jack Miller & John Moss, Clarksville, 75 homes. Owner builds. $300,000.

Tex., Dallas — Crown Constr. Co., 1911 S. Westmoreland St., 38 dwellings. Owner builds. $250,000. CD 3/3.

Tex., Garland— H. & N. Builders, Garland, 80 dwellings to Harris & Boyd, Garland. $480,000. CD 3/3, under CA.

●**Tex., Houston**—Deepwater Homes Development Co. Inc., c/o Maurice Krull, 2005 Canal St., 150 dwellings. $1,250,000; community center, $450,000. Owner builds. CD 11/1—ENR 11/18.

Tex., Houston — Shore & Brown, 322 W. Cowan St., community center. Own forces. $275,000. CD 10/22/47—ENR 11/13/47.

Tex., Houston — Highland Village Corp., 3713 Inwood St., 100 dwellings. Own forces. $850,000. CD 12/15/47.

●**Tex., Houston**—Southway Manor Corp., 4110 Dennis St., 62 two story apartments. Owner builds. Approx. $1,500,000. CD 3/7.

Tex., Houston—H. Sterling, 3965 Del Monte Dr., 60 brick veneer apartment units, Revere St. Own forces. $275,000. CD 11/22—ENR 12/16.

Tex., Houston—R. A. Carlson, 6900 Old Main St. Rd., residential project, Dumbarton St. Owner builds. Approx. $325,000. CD 3/4.

Tex., Victoria — Sisters of the Incarnate Word, Victoria, 1 story 58x260 ft. school and 88x87 ft. wing, masonry constr. to Urban Constr. Co., Victoria, $450,000. H. Steinbomer, 912 Travis Bldg., San Antonio, archt., Frank T. Drought, 117 W. Pecan St., San Antonio, engr.

Wis., Green Bay—Wisconsin Telephone Co., 722 N. Broadway, Milwaukee Zone 2, 2 story, bamnt., 102x113 ft. rein.-con. brick central office to The Selmer Co., Green Bay. Bids 2/21. CD 2/16—ENR 2/24.

Ont., Toronto — Model Builders Inc., 348 Whitmore Ave., housing project, Steimer Ave., Owner builds, $250,000.

Que., Magog—Roman Catholic Parish of Ste. Margaret-Mary, St. David St., 83 x 166 ft. church, to Raoul Cabana, Magog. Est. $300,000. J. A. & A. Poulin, 63 Prospect St., Sherbrooke, archts., Brouillet & Carmel, 3605 St. Denis St., Montreal, engrs. CD 2/18—ENR 2/24.

Que., Verdun—P. Senecal, 206 St. Peter St., 50 dwellings. Owner builds. $200,000.

INDUSTRIAL BUILDINGS

BIDS ASKED

March 21

Mo., St. Louis—WAREHOUSE—Minneapolis-Honeywell Regulator Co., 4020 Chouteau Ave., Zone 10, 1 story, 69x96 ft. brick, concrete, warehouse, office, 4354 Olive St., Wm. B. Ittner, Inc., 408 Bd. Educ., Bldg., 911 Locust St., Zone 1, archt. CD 2/28—ENR 3/10.

March 24

La., New Orleans — PLANT — American Radiator & Standard Sanitary Corp., c/o Prack & Prack, archt., Federal & Philadelphia Sts., Pittsburgh, Pa., material handling plant.

March 25

Tex., San Antonio — ADMINISTRATION — San Antonio Transit Co., Transit Tower Bldg., administration bldg. $400,000. Atlee B. & Robert M. Ayres, Transit Tower Bldg., archt., Frank T. Drought, 117 W. Pecan St., engr. Bids 7/1 rejected. LB $437,434. CD 7/8—ENR 7/15.

About March 29

Ky., Jackson—PLANT—Royal Crown Bottling Co., Jackson, plant. $90,000.

March 31

Minn., Jackson—DIESEL ENGINES—Federated Rural Electric Assn., G. Comstock, pres., furnish and install 3 diesel-fuel (natural gas and oil) diesel engines, each direct connected to 1000-1200 KW A. C. generator appurtenances and auxiliaries. $150,000. Plans deposit $25. Pfeifer & Shultz, 702 Wesley Temple Bldg., engr. CD 1/14.

S. C., Pageland — WAREHOUSE, etc. — Lynches River Electric Co-operative, Pageland, warehouse and office. Plans deposit $25, Southern Eng. Co., 699 Spring St. N. W., Atlanta, Ga., archt.

April 1

Ky., Millstone—COAL TIPPLE—South East Coal Co., Millstone, coal tipple. Over $100,000.

April 2

Ky. Cornettsville — COAL TIPPLE and CHUTE—Miniard Coal Co., c/o Allison Miniard, coal tipple and chute, $100,000.

April 8

S. C., Conway—WAREHOUSE—Horry Electric Co-operative, Inc., Conway, warehouse and office. Plans deposit $25, Southern Engr. Co., 699 Spring St., N. W. Atlanta, Ga., archt.

THESE RESTORATION PROBLEMS

Were Quickly and Easily Solved By Our

PRESSURE CONCRETE METHOD!

FACTORY FACADES
GRAIN ELEVATORS
CHIMNEY STACKS
COAL BUNKERS
MINE TUNNELS
RESERVOIRS
BUILDINGS
BRIDGES
CANALS
TANKS
WALLS
DAMS

Write or wire for engineering data and estimates.

HUDSON RUMSEY CO. INC.
1200 NIAGARA ST. BUFFALO, N.Y.

About April 3

Ky., Jackhorn — PLANT — Elk Horn Coal Corp., Jackhorn, coal cleaning plant. Over $75,000.

About August 1

Kan., Hays—GRAIN ELEVATOR—Farm Co-operative Assn., Hays, grain elevator. $150,000. CD 1/6—ENR 1/20.

April 11

Ga., Americus—WAREHOUSE, etc.—Sumter Electric Membership Corp., warehouse and office. Plans deposit $25, Southern Eng. Co., 699 Spring St. N. W., Atlanta, archts.

Bids Asked

Pa., Phila.—SALES, SERVICE—Kaplan & Fish., archt., 2120 Spruce St., sales and service bldgs. alterations for Wilkie Buick Inc., 1724 N. Broad St. $75,000.

R. I., Providence — FACTORY — Friendship Realty Co., c/o DiMitri & DiMitri, archts., 17 Exchange St., 3 story, brick, steel factory, Friendship St. $100,000. CD 2/23—ENR 3/10.

Ont., St. Catherines—PUMPHOUSE—J. B. Wallace, archt. c/o Supertest Petroleum Corp., 660 Richmond St., London, pumphouse and tanks, $75,000.

SOON LETS CONTRACT

Calif., San Bernardino—BAKERY ADDN.—Barbar Ann Baking Co., Massachusetts Ave., soon lets contract, 1 and part 2 story bakery addn., $200,000. Bennett & Bennett, 1165 E. Colorado St., Pasadena, archts. CD 2/28—ENR 3/10.

Ind., Anderson—FACTORY—Nicholson Fuel Co., Jno R. Burton, mgr., 32 St., 1 story 52x164 ft. brick, steel, rein.-con. factory addn., $85,000. Ernest R. Watkins, Citizens Bank Bldg., archt.

N. J., Bridgeton—GARAGE, etc.—Cowell, Robinson & Martin, archts., 25 W. 43 St., New York, N. Y., soon lets contract 1 story bsmnt., 61x264 ft., brick agency bldg., garage and repair shop for General Baking Co., 420 Lexington Ave., New York, N. Y. $75,000.

Pa., Phila. — WAREHOUSE — I. Demchick, archt., 246 S. 15 St., soon lets contract warehouse addns. for Stern & Co., 340 N. 6 St. Over $68,000.

Pa., Chester — BUILDING — Scott Paper Co., foot of Market St., Chester, soon lets contract bldg. No. 71, alterations. Over $68,000. Des Granges & Steffian, 161 Devonshire St., Boston, Mass., archts.

LOW BIDDERS

Colo., Denver—WAREHOUSE—**Union Pacific Railroad Co.**, W. C. Perkins, ch. engr., 1416 Dodge St., Omaha 2, Nebr., warehouse, from Folson Constr. Co., 40 West Louisiana St., **$160,713**, est Over $65,000. Roland L. Linder, 507 Insurance Bldg., archt. and engr.

Del., Wilmington — WAREHOUSE — Delaware Floor Products Co., Christiana Ave., rejected bids warehouse, est. Over **$70,000**. Project postponed. CD 12/28—ENR 1/6.

Tenn., Nashville—BUS TERMINAL—Nashville Depot Corp., c/o Greer, Holmquist & Chambers, archts., Chamber of Commerce Bldg., Birmingham, Ala., bus terminal from Boone Contrg. Co., 3rd Natl. Bank Bldg., **$73,927**. CD 2/21—ENR 3/3.

Tex., Belton — POWER PLANT — Brazos River Transmission Electric Co-operative, Inc., Belton, addnl. power plant installations and imprvts. from E. E. Farrow, 6901 Forrest Park Rd., Dallas, **$99,980**. Laramore & Douglass, Inc., 79 E. Adams St., Chicago, Ill., engrs. CD 1/16/47—ENR 1/30/47.

Tex., Houston—WAREHOUSE—Southwestern Theater Equip. Co., 1416 Main St., 2 story 50x100 ft. frame, brick warehouse, rein.-con. slab fdn. from Lewis Duncan, 1417 Chenevert St., **$92,950**. Est. $75,000. CD 3/1—ENR 3/10.

CONTRACTS AWARDED

Ala., Moundville—SALES and SERVICE—Moundville Motor Co., c/o Wilmot C. Douglas, 226 N. 14 St., Birmingham, auto sales and service bldg., to Southeastern Mfg. Corp., Tuscaloosa. Est. over **$75,000**. CD 10/11—ENR 10/14.

Calif., Niles — FURNACE BLDG. — Pacific States Steel Corp., Niles, open hearth furnace bldg. Owner builds, **$175,000**. CD 1/5/47—ENR 1/30/47.

Calif., Oakland—FACTORY—J. C. and Margaret Lynn, foot of Park Ave., Emeryville, 1 story, steel factory, 1819 10 St., to N. H. Sjoberg & Son, 5604 E. 16 St. Est. **$70,000**.

Ga., Griffin—PLANT ADDN.—Thomas Packing Co., Frank Thomas, Griffin, packing plant addn. Owner builds, **$75,000**.

Ill., Chicago—BOILER HOUSE ADDN.—Peter Fox Brewing Co., 2606 W. Monroe St., boiler house addn., to Sumner S. Sollitt Co., 307 N. Michigan St., $75,500. Commercial Testing & Engrg. Co., 307 N. Michigan St., engr.

Ind., Evansville—BREWERY—F. W. Cook Brewing Co., 7 and Main Sts., 5 story, 50x100 ft. brick, rein.-con. steel, brewery addn., 7 St., to Ryan Constr. Co., Court Bldg., Est. **$400,000**. Harley, Ellington & Day, 153 Elizabeth St., Detroit, Zone 1, Mich., archts.

Ky., Clermont—BOTTLING HOUSE—Beam Distillery, Clermont, bottling house to Mac Constr. Co., Shelbyville, **$136,000**. Wagner & Potts, Fincastle Bldg., Louisville, archts., J. H. Potts, Fincastle Bldg., Louisville, engr.

La., Lake Charles—BUS TERMINAL—Southwest Greyhound Lines, c/o contractor, remodeling and extens. bus terminal, to Arch Munn & Sons, 5319 Junius St., Dallas, Tex., **$90,000**. Grayson Gill, 1913 San Jacinito St., Dallas, Tex., archt.

Md., Baltimore—STOCK and FERMENTING CELLARS—Gunther Brewing Co. Inc., 1211 S. Conkling St., 82x102x113 ft., brick, steel, concrete stock and fermenting cellars, to Morrow Bros., Inc., 2315 N. Charles St. Bids 2/23, awarded 2/28. CD 2/7—ENR 2/17.

● **Minn., Fox Lake** — PLANT — Interstate Power Co., 1000 Main St., Dubuque, Ia., electric generating plant, to Bates & Rogers Constr. Co., 111 W. Washington St., Chicago, Ill. Est. **$2,000,000**.

Mo., Florissant (St. Louis, Zone 21, P. O.)—WAREHOUSE — Delta Realty Co., Webster Groves, St. Louis, Zone 19, 2 story, 75x414 ft. sales room and warehouse, Hy. 66, north of Brown Rd., to Walter T. Hellmich, Inc., 1037 Big Bend Richmond Heights, St. Louis, Zone 7. Est. **$80,000**.

Mo., Kansas City—WAREHOUSE—American Sash & Door Co., 16 and Bellefontaine Sts., 21x136 ft., concrete brick warehouse, 1608-26 Walroad St., to William S. Rawlings, Co., 1004 Forrest Ave. Est. **$76,500**.

Mo., St. Louis—TERMINAL—Campbell 66 Express, Inc., F. G. Campbell, Springfield, 1 and 2 story, 55x174 ft. and 27x102 ft. T. shaped, brick, steel, concrete truck terminal, 805 S. 13 St., to Swan Constr. Co., 4504 Seibert Ave., Affton, St. Louis, Zone 23. Raymond X. Grueninger, 19 N. Meramec St., Clayton, St. St. Louis, Zone 5, archt.

N. J., Eagle Point (P. O. Westville)—OIL SEPARATOR BLDG.—The Texas Co., 134 E. 42 St., New York, N. Y., 160 x 227 ft. oil separator bldg., and drainage, concrete basin to H. John Homan, 434 Haddon Ave., Collingswood, Over **$125,000**. D. W. Caswell, c/o owner, ch. engr.

Okla., Tussy—PLANT—Magnolia Petroleum Co., Magnolia Bldg., Dallas, Tex., gasoline plant, handling 22 m. cu. ft. natural gas per day Stephens Co., to Jones & Laughlin Co., Thompson Bldg., Tulsa, **$600,000**. Awarded 2/16.

Pa., Lancaster — LABORATORY—Hamilton Watch Co., Columbia Ave. and West End Ave., 4 story bamnt. and pent house, 61x181

GOOD NEWS
for men
who drill holes in
concrete, brick, etc.

SAVE TIME and MONEY!

Try these new specially-tipped drill bits at our risk on money-back guarantee!

CONCRETE TERMITE
ROTARY DRILL BITS

"DRILL TRIPLE-QUICK Because They're TRIPLE-TIPPED!"

● THE SECRET of this new, fast-drilling rotary drill bit lies in its special long-lasting tip and its newly-designed worm which carries out cuttings. This means less heat, less wear on the tip and longer life per drill. Used with any electric drill.

● GUARANTEED to out-drill and out-last any other drill of its kind of comparative cost. Next time *try* "The Drill with the Worm." Users know that Concrete Termites give them faster drilling . . . more holes per drill . . . less cost per hole. See for yourself. Pat. No. 2425132

Write or Wire Today for Free Catalog and Prices.

(Dealers Needed to Service Inquiries.)

CONCRETE TERMITE DRILL COMPANY
1635 EAST WALNUT STREET • PASADENA 4, CALIF.

S-T-R-E-T-C-H YOUR DOLLARS

EAGLE TRUCK MOUNTED LOADERS

- **Handle any loose material quickly and economically — dirt, cinders, coal, snow, etc.**
- **One-man operated—*economical!***
- **From job to job at highway speeds.**

Send for detailed specifications!

EAGLE
JAW CRUSHERS • IMPACT BREAKERS
PULVERIZERS • CONVEYORS • LOADERS
CRUSHER CO., *Inc.* GALION OHIO·U·S·A

Use
COMMERCIAL LINER PLATES

in any ground!

MADE IN ANY SHAPE AND RADII FOR HIGHWAY, WATER, AND SEWER TUNNELS

THE *Commercial*
SHEARING & STAMPING CO. YOUNGSTOWN 1 OHIO

WATER IS "DUCK SOUP"...
WITH COMPLETE WELLPOINTS

Don't let ground water stop you. COMPLETE'S patented, fluted-tube wellpoints won't clog . . . can de-water every type of water-laden soil wherever well-point operation is practicable . . . are the simplest and most economical de-watering equipment known to present day engineering.

Sale or rental. Call "COMPLETE" and forget your water problems.

2 to 5 stage jetting pumps available

COMPLETE MACHINERY & EQUIPMENT CO., INC.
LONG ISLAND CITY 1, N. Y.
Engineering agents throughout the U. S.

COMPLETE WELLPOINT SYSTEMS

Singleton's
MANUAL OF STRUCTURAL DESIGN

NEW THIRD EDITION

The new revised edition contains latest design specifications on steel, concrete, aluminum and timber as well as new data—new tables and over 100 new pages.

The recognized handbook for every structural engineer.

$6.00
PER COPY, POSTPAID

H. M. IVES & SONS
415 KANSAS AVE.
TOPEKA, KANSAS

ft. and 61x81 ft. wing, engineering laboratory to D. S. Warfel, 440 N. Prince St. **$700,000.** CD 1/26—ENR 2/3.

Pa., Neville Island—(Pittsburgh P. O.)—MANUFACTURING BLDG.—Chaplin Fulton Mfg. Co., 38 Penn Ave., 1 story 150x220 ft. brick and block mfg. bldg., to Rose & Fisher, Republic Bldg., 200 E. Ohio St., Pittsburgh. Est. **$229,187.** Bids 2/15. CD 2/3—ENR 2/10.

Pa., Phila.—WAREHOUSE—Ayers Realty Co., 919 Walnut St., warehouse-showroom and offices alterations to Barclay-White & Co., 22 N. 36 St., **$70,000.** Pennell & Wiltberger, 1524 Chestnut St., engrs.

Pa., Phila.—SHOWROOM, PARTS DPT.—Giles & Ransome Inc., 2729 Hunting Park Ave., 1 and 2 story 15,000 sq. ft. brick, steel showroom and parts dpt. addn. to Lauter Constr. Co., 112 S. 16 St., **$80,000.** Carson & Carson, 16 S. Broad St., engrs.

Pa., Phila.—SERVICE BLDG.—Needham's Motor Service, Inc., 1429 Parrish St., motor service bldg. and office to Rex Constr. Co., 4347 Milnor St., **$70,000.** H. Childs Hodgens, 1420 Chestnut St., archt. CD 7/26/46—ENR 8/1/46.

Pa., Red Hill—MILL—Rayflex Mfg. Co., Red Hill, 1 story 82x115 ft. brick mill addn. to G. L. Janke, Lansdale. Over **$70,000.** Bids 1/31. CD 1/26—ENR 2/3.

S. C., Hemingway—WAREHOUSES—Tobacco Growers Warehouse Corp., c/o Parrott R. Hardy, supt. of constr., Mullins, 2 tobacco warehouses. Owner builds. Over **$125,000.** CD 2/4—ENR 2/17.

S. C., Mullins — WAREHOUSE — Paul V. Hardy, Mullins, 90,000 sq. ft. tobacco warehouse addn. Owner builds. Over **$100,000.**

S. C., Newberry — MILL — Kendall Mills, Newberry, mill addn. to McKoy-Helgerson Co., Greenville. Over **$100,000.**

Tex., Amarillo — WAREHOUSE — Phillips Petroleum Oil Co., Amarillo, warehouse, force account. **$75,000.** CD 7/26—ENR 8/5.

Tex., Beaumont—SUBSTATION, etc.—Bethlehem Steel Corp., c/o R. F. Hoffield, purch. agt. Island Park, Beaumont, 37x600 ft. steel piling, concrete deck, mooring pier and substation to Austin Bridge Co., 4720 Sycamore St., Houston. **$320,000.** Est. $300,000. Bids 1/28. CD 1/24—ENR 2/3.

Tex., Brownwood—WOOLEN MILL—Zlock Industries, Inc., Brownwood, woolen mill. Own forces. **$150,000.** CD 2/4.

Tex., Dallas—FACTORY—Southern Separator Co., 1300 Marilla St., factory, to F. S. Oldt Co., 403 S. Haskell St. Approx. **$70,000.**

Tex., Fort Worth—BUS TERMINAL—Southwest Greyhound Lines, Inc., c/o contractor, bus terminal and office to Arch Munn, 5319 Junius St., Dallas. Approx. **$400,000.** CD 10/28—ENR 11/11.

Tex., Houston — PLANT — Sanitary Farm Dairies, Inc., 1802 W. Gray St., diary and milk plant unit to Davis Constr. Co., c/o owners. **$70,000.** CD 10/5—ENR 10/7, under LR.

Tex., Laredo—PLANT—H. D. Whittenberg, McAllen, cotton gin plant, purchase and hire. **$75,000.**

Tex., San Antonio—LAUNDRY—Santa Rosa Hospital, W. Houston and Santa Rosa Sts., 2 story bsmnt., laundry plant and storage to Walsh & Burney, 928 N. Flores St. Approx. **$75,000.** Phelps & De Wees & Simmons, 1501 Majestic Bldg., archts., Frank T. Drought, 117 W. Pecan St., engr.

Tex., Stoneham—DAIRY, PLANT—W. N. Fabian, Stoneham, dairy and plant near Navasota. Own forces. Approx. **$75,000.**

●**Tex., Wichita Falls**—REFINERY PLANT—Panhandle Producing & Refining Co., Panhandle Bldg., refinery plant enlargement, own forces, under supervision of Universal Oil Products Co., 310 S. Michigan St., Chicago, Ill., and Jones & Laughlin Supply Co., Oil and Gas Bldg., Houston, engrs. Approx. **$1,000,000.** CD 12/22—ENR 12/30.

Tex., Wichita Falls—MILL—Wichita Falls Planing Mill, Wichita Falls, planing mill unit. Own forces. **$77,000.**

Wash., Seattle—PLANT—George A. Hormel & Co., 1229 6 Ave. S., 100x200 ft. mill addn. to meat packing plant to S. S. Mullen, Inc., 9 Aves. N. and Roy Sts. Est. **$100,000.** G. C. Field, Jones Bldg., archt.

W. Va., Charleston—BUS GARAGE—Atlantic Greyhound Lines, c/o contractor, bus garage, to A. G. Higginbotham Constr. Co., Charleston Natl. Bank Bldg. Over **$200,000.**

●**W. Va., Clarksburg**—WAREHOUSE—Hope Natural Gas Co., 445 Main St., West Clarksburg, 1 and 2 story 100x150 ft. brick, glazed tile warehouse, shop bldg.; ⅝ mi. 50 ft. wide, steel frame bridge to Gilmore Carmichael, & Olson Co., 1873 E. 55 St., Cleveland, O. **$1,500,000.** CD 1/25—ENR 2/3.

Wis., Oconomowoc—PRINTING PLANT—C. W. Brown Printing Co., 126 N. Main St., 1 story 84 x 45 x 175 ft. steel brick, printing plant, concrete fdn. to Otto Biefeld, Watertown.

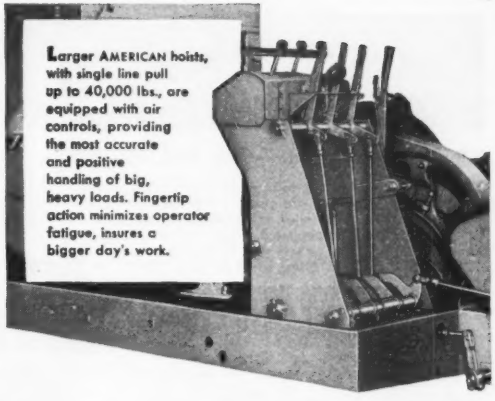
Alta., Calgary — WAREHOUSE—Consolidated Fruit Co. Ltd., 24 Michael Bldg., 120 x 190 ft. steel, brick, fruit and vegetable warehouse, 10 Ave. W., between Fourth and Fifth Sts., to Bird Constr. Co. Ltd., Seventh and Smith Sts., Regina, Sask., Approx. **$350,000.** Rule, Wynn & Rule, 513 Eighth Ave., archt.

No ACROBATS need apply!

NO, and it doesn't take an India-rubber man to handle the controls of an AMERICAN hoist, either.

One big reason why AMERICAN hoists work more minutes per hour, more hours per day, is that controls are grouped to eliminate waste motion and are banked for effortless "reach". Hand levers are operated with a natural push-pull motion . . . not an awkward lateral action. Positive acting foot-brake keeps the load under command, and external contracting band friction clutch makes the hoist answer instantly to the operator's touch. Result: a rested, alert man at the controls.

AMERICAN Hoist builds the world's most complete line of hoists . . . from a quarter-ton Utility Hoist to Contractors' Hoists with 20 ton capacity. To find out about the model that fits your business best, write today for catalog.


Larger AMERICAN hoists, with single line pull up to 40,000 lbs., are equipped with air controls, providing the most accurate and positive handling of big, heavy loads. Fingertip action minimizes operator fatigue, insures a bigger day's work.

Utility Hoist 500 lbs. S.L.P.
Single Drum Hoist 2,500 lbs. S.L.P.
Double Drum Hoist 7,500 lbs. S.L.P.
Three Drum Hoist 10,000 lbs. S.L.P.
Four Drum Steam Hoist 25,000 lbs. S.L.P.
Three Drum Hoist 40,000 lbs. S.L.P.

AMERICAN HOIST & Derrick Co.
ST. PAUL 1, MINNESOTA

MAIL THIS COUPON TODAY! 9102

● Please send catalog showing hoists for construction operations.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____ 3

American Hoist
and DERRICK COMPANY
St. Paul 1, Minnesota

Plant No. 2: So. Kearny, N. J.
Sales Offices: NEW YORK • PITTSBURGH • CHICAGO

THIS TRANSCONTINENTAL RAILROAD BOUGHT

NINETEEN BROWNINGS

IN THE LAST FOUR YEARS...OVER 100 SINCE 1906

BROWNING
LOCOMOTIVE, WAGON
TRUCK and TU-CONTROL *Cranes*

THE new Browning M Series Locomotive Cranes are handling all types of heavy maintenance-of-way work for this class 1 railroad.

Bridge and roadway crews call for the Browning Diesels from all points on the transcontinental line—in fact it is hard to locate the Brownings from day to day.

Combining typical Browning ruggedness, long range mobility and easy operation the M Series Diesel has the versatility to handle clamshell, magnet, hookblock, piledriver and crane work on *your* job dependably and economically.

Bulletin No. 114718 describes new Browning features of design, construction and operation. Write for it today.

THE BROWNING CRANE & SHOVEL CO.
16223 WATERLOO ROAD, CLEVELAND 10, OHIO

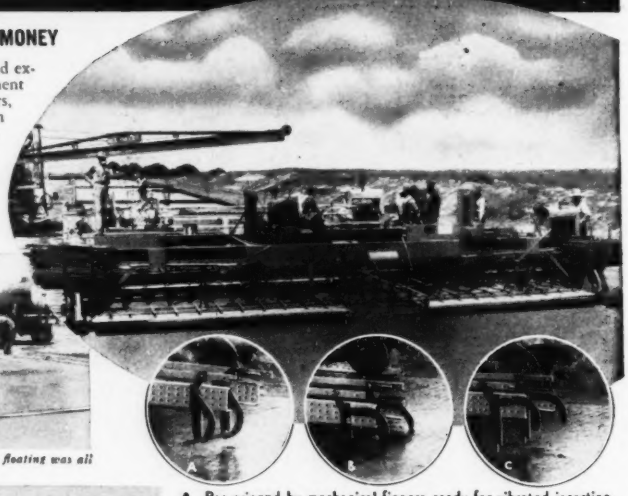
Mechanical Dowel AND TIE-BAR INSTALLER

AIRPORT CONTRACTORS—SAVE TIME AND MONEY

You eliminate stakes, complicated holding harness and expensive hand labor, and are assured of perfect alignment with this Flex-Plane installer. Job tested for three years, this machine has demonstrated substantial savings in time and money. Let us tell you how—write today to Flex-Plane, Warren, Ohio, for Bulletin J-105.

- ADJUSTABLE TO VARIOUS DOWEL SPACINGS
- ADJUSTABLE TO VARIOUS PAVEMENT WIDTHS
- INSTALLS IN EXACT POSITION AND ALIGNMENT
- CUTS JOINTS

Note smooth pavement surface after installation. Regular floating was all that was required.



A. Bar gripped by mechanical fingers ready for vibrated insertion into plastic concrete. Tie-bars and dowels easily insert into fingers.

B. Bar has been worked, by vibration, to pre-determined depth. Rear holding finger was disengaged as bar started through concrete.

C. Completed operation. Vibrated removal of fingers assures complete seal of plastic concrete. Surface disturbance is minor.

FLEX-PLANE
WARREN OHIO
(FLEXIBLE ROAD JOINT MACHINE COMPANY)

B. C., Quatsino Sound—ICE PLANT—Ryuquot Trollers Co-operative Assn., 1140 Government St., Victoria, ice plant, Owner builds. **$75,000.** A. C. Smith, c/o owner, engr.

●**B. C., Ruskin**—British Columbia Electric Co. Ltd., Vancouver, electrical power plant addn., Owner builds. **$1,000,000.**

B. C., Sanca—MINE DEVELOPMENT—Lakeview Mines Ltd., c/o R. D. Powelson, Kimberley, mine development, incl. cookhouse, ore bins, blacksmith shop, warehouse. Owner builds. **$125,000.**

Ont., Geraldton—DIAMOND DRILLING—Coulee Lead & Zinc Mines Ltd., Geraldton, diamond drilling, to Boyles Bros., Kirkland Lake. Est. **$100,000.**

Ont., Port Arthur—TERMINAL—Saskatchewan Pool Elevators Ltd., Regina, Sask., pool terminal to Commonwealth Constr. Co., Ltd., 300 Royal Bank Bldg., Winnipeg, Man., **$150,000.** C. D. Howe Co. Ltd., Whalen Bldg., Port Arthur, engr.

Ont., Toronto — WAREHOUSE—Empire Brass Mfg. Co. Ltd., Dundas St. E., London, 3 story, bsmnt., brick, office and warehouse, Dartnell Ave. to Pigott Constr. Co. Ltd., 1250 Bay St. Approx. **$240,000.** Bids 2/21. CD 2/4—ENR 2/17.

Ont., Toronto — FACTORY — G. Tarlattini, 1108 Pape Ave., 2 story, bsmnt., concrete, brick factory, to A. F. Dini, 329 Shaw St., Approx. **$70,000.** Barnett & Rilder, 209 Benborough Dr., archts.

Ont., Windsor—PLANT—Canadian Sirocco Co. Ltd., 310 Ellis Ave., plant addn., to The Austin Co. Ltd., 16112 Euclid Ave., Cleveland, O., U. S. A., **$75,000.** CD 1/9/46—ENR 1/17/46.

●**Que., Montreal East (Postal Dist. Montreal)**—REFINERY Shell Oil Co. Ltd., 660 St. Catherine St., W., Montreal, refinery to A. G. McKee & Co., 2300 Chester St., Cleveland, O., U. S. A., and Fluor Corp. of Canada, Ltd., Montreal, Est. Over **$1,000,000.**

●**Que., Montreal**—PLANT—Dominion Textiles Co. Ltd., 710 Victoria Sq., St. Anns Mill addn., to Pentagon Constr. Co. Ltd., 1225 Bishop St., Approx. **$1,500,000.** Ernest Jubien, c/o owner, engr. CD 11/24.

Que., Montreal—FACTORY—Universal Ornament Mfg. Co. Ltd., 540 Beaudry St., 2 story, 67 x 143 ft. concrete, steel, brick, factory, Parthenais St., to Bereron & Potel Ltd., 4304 Marquette St., **$140,000.** CD 3/4—ENR 3/10, under LB.

Que., Shawinigan Falls—MINE DEVELOPMENT—Chavigny Gold Mines Ltd., P. O. Box 415, Montreal, iron and titanium property development. **$100,000.** Owner builds. L. Clerg, c/o owner, engr.

UNCLASSIFIED

BIDS ASKED

March 23

South Dakota — RURAL DISTRIBUTION LINES—Rosebud Electric Assn., Winner, 241 mi. rural distr. lines, Tripp Co. $200,000. Plans deposit $25. United Engr. Service, 600 Kasota Bldg., Minneapolis, Minn., engr. CD 3/8—ENR 3/10.

British Columbia—WHARF—J. M. Somerville, secy., c/o Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf repairs, Glen Valley, Gordon Rd., Hammond, McMillan Island, Port Kells, Port Mann and Whonnock. Approx. $95,000. Plans deposit $10. R. Blais, c/o owner, engr.

March 24

✝**Me., Augusta**—CHAIN LINK FENCE—U. S. Eng., Bldg., 7, Camp Keyes, Augusta, installation of chain link fence, Camp Keyes, Serial No. MNG 17-018-49-02, extended date. CD 2/25—ENR 3/10.

Tennessee — RURAL DISTRIBUTION LINES—Fort Loudon Electric Co-operative, Madisonville, 170 mi. rural distr. lines and other sys. imprvs., Loudon Co. A. D. McWhorter, Jr., 212½ Union Ave., Nashville, engr. CD 12/25—ENR 1/20.

✝**Wyoming and Nebraska** — OVERHEAD GROUND WIRES—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., installing overhead ground wires on Cheyenne-Gering 115 kv transmission line, Spec. 2584, Kendrick Proj. between Cheyenne, Wyo., and Gering, Neb. CD 2/25—ENR 3/10.

March 25

N. Y., Brooklyn—DUCT LINE—Bd. Transportation, 250 Hudson St., New York, Zone 13, constructing New York City Transit System Duct Line connecting the Central Office Bldg. at Jay St. and the IND, IRT and BMT Divisions subsurface railroads in Brooklyn.

March 28

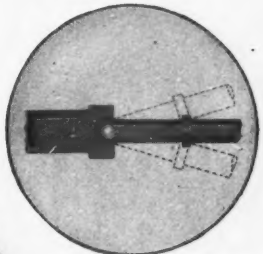
Calif., San Jose — GRANDSTAND — Santa Clara Fair Assn., c/o Santa Clara Co. Bd. Supervs., Courthouse, rein.-con. steel 83x400 ft., grandstand with concrete asphalt flooring horse barn and locker rooms at Fairgrounds, $500,000. Plans deposit $25. C. J. Ryland, 467 Alvarado St., Monterey, archt. CD 6/1—ENR 6/3.

ATLANTIC Pneumatic TOOLS

A New ECONOMY

for ELECTRIC—GAS—WATER COMPANIES, MUNICIPALITIES and CONTRACTORS

ATLANTIC PNEUMATIC PIPE DRIVER



Unversal Joint between driving head and shank widens working angles, simplifies driving in small spaces.

Pays for Itself on the First Job. Drives pipe underground 25 feet an hour.

Up to 2" pipe through ordinary soil. Drives under highways, abutments, lawns, etc., without excavating. No delay coupling added lengths; no burred pipe ends.

NO TRENCHING, BACKFILLING OR SURFACING.

Takes Power from Standard Paving Breaker!

A SIZE FOR EVERY SERVICE

Only 3 parts: Driving point, driving head, driving shank. Weighs only 8 lbs. Standard sizes fit from 1" to 2" standard pipe. Special sizes for extra heavy pipe. Shank fits standard pavement breakers. Lasts for years. Pays Dividends over and over again. Acme of simplicity and low cost! Made from Select Steel. Specially Heat-treated to Withstand Heavy Blows.

Specialists in Tool Steels for chisels, drills, blacksmith tools and Alloy steels for axles, bolts, pins, pistons and shafts
Non-tempering tool steels for greater safety and speed

Write for descriptive folder EPD.

ATLANTIC STEEL CORP. 1775 BROADWAY, N. Y. 19

BAILEY METERS AND CONTROLLERS

FOR SEWAGE TREATMENT AND WATER SUPPLY . . .

● Venturi Tubes, Weirs, Flumes, Nozzles and other primary elements; Mechanically and Electrically operated Registers and Complete Automatic Control Systems.

BAILEY METER COMPANY

1029 IVANHOE ROAD • CLEVELAND, O.

Bailey Meter Co. Ltd., Montreal, Canada

"GUNITE"

NEW CONSTRUCTION AND REPAIRS

- Prestressed Tanks
- Repair all Types Disintegrated Concrete
- Dam Reconstruction and Repairs
- Linings and Repairs to Reservoirs, Stacks, Bunkers, Sewers, Tanks, Tunnels, Pen Stocks
- Structural Steel Encasements
- Restoration of Masonry Structures

Experienced Personnel

Write for our new 48 page Bulletin

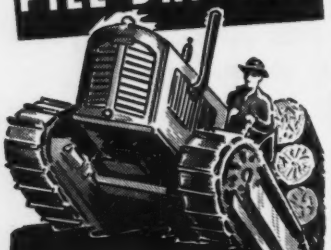
PRESSURE CONCRETE CO.

Gunite Contractors and Engineers

193 Emmett Street, Newark 5, New Jersey — *50 Court Street, Florence, Alabama*

33 N. La Salle St., Chicago 2, Ill.

HEAVY HAULING
OR
PILE DRIVING



IT TAKES THE
RIGHT KIND
of POWER

SUPER-VULCAN
OPEN TYPE
DIFFERENTIAL — ACTING
PILE HAMMERS
18C, 30C, 50C and 80C

In pile driving, choose the power of Super-Vulcan, the rugged, positive-action hammer that delivers more blows per minute and drives any kind of pile down on schedule with profit-making economy.

Ask any user about Super-Vulcan's rugged strength, compactness, simple operation, cost saving, and proven performance. The open type fits the same leads, uses the same accessories, as the Warrington-Vulcan Single-Acting Pile Hammer.

Choose durable Super-Vulcan, the perfect answer to your pile driving problems. Write for complete details today.

Sizes
18C-30C-50C-80C
meet all needs

VULCAN IRON WORKS
Since 1852
331 North Bell Avenue
Chicago 12 ---Illinois

March 30

British Columbia—DIKE—J. M. Somerville, secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., renewal Sapperton Dike, 1, Fraser River, Queens Reach, New Westminister, Approx. $75,000. R. Biais, c/o owner, engr.

March 31

Calif., Los Angeles — SWIMMING POOL — City Dpt. Parks & Recreation City Hall, swimming pool, bath house, clubhouse, at Cheviot Hill Playground, $250,000. Dwight Gibbs, 257 S. Spring St., Los Angeles, archt. Extended date. CD 2/24—ENR 3/3.

About April 1

Ala., Sheffield—SWIMMING POOL, etc.—City, Sheffield swimming pool and bath house. Vernon P. Crockett, P. O. Box 797 engr.

April 1

†**California**—TRANSMISSION LINES — Bureau Reclamation, Dpt. Interior, Elverta, 230 kilovolt transmission lines, tap line, from Shasta-Tracy Line 1 to P. G. & E. Company Shasta substation and wood-pole section of Shasta-Tracy line 1, near Redding, Central Valley Proj., Spec. 2587. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

April 4

N. S., Halifax—PIER—C. P. Buckley, secy., c/o National Harbor Bd., West Block, Ottawa, Ont., reconstruction Pier 3, Halifax Harbor. Approx. $800,000. Plans deposit $100.

April 5

Calif., Petaluma—LIVESTOCK BLDGS.—State div. Architecture P. Wks. Bldg., Sacramento, 2 sheep and swine bldgs, cattle barn, poultry bldg., judging ring for 34th District Agricultural Assn. Plans deposit $25. Anson Boys, state archt.

About April 8

†**N. M., Los Alamos**—GAS PIPELINE—U. S. Atomic Energy Comn., Los Alamos, approx. 95 mi. 12 in. gas line extending from Los Alamos, N. M., in northwesterly direction to stated tie-in location on an existing gas line, about 50 mi. west of Cuba, N. M. and approx. 35 mi. south of Bloomfield, N. M. Inv. No. 291-49-122. Plans deposit $50.

April 12

Mont., Billings — GRANDSTAND—Yellowstone Co., Billings, replacing grandstand, Cushing & Terrell, 212½ N. Broadway, Billings, and Orr Pickering & Assoc., Fratt Bldg., Billings, archts. CD 1/26—ENR 2/17.

LOW BIDDERS

†**Ark., Hot Springs**—COOLING SYSTEM, etc.—National Park Service Dpt. Interior, Region 3, Santa Fe, N. M., cooling and distr. sys., incl. 100,000 gal. rein.-con. reservoir, 12 in. c.i. pipeline, pump house, appurtenances, etc., at Hot Springs National Park, from William Peterson, Commercial National Bank Bldg., Little Rock, $158,475. CD 1/46—ENR 2/3.

Calif., Los Angeles — PARK BLDG. — Bd. Supervs. Los Angeles Co., 501 Hall of Records, Mar. 1, 83x152 ft. community bldg. and auditorium in West Hollywood County Park, from Contracting Engineers, Inc., 2210½ W. Vernon Ave., $150,750. CD 2/10—ENR 2/17.

Calif., Los Angeles—TRANSIT SHED FACILITIES—City Harbor Comn., 102 City Hall, Mar. 2, transit shed facilities at Berths 154 and 155 from Baruch Corp., 5655 Wilshire Blvd., Los Angeles, $942,150, est. $750,000. CD 2/15—ENR 2/24, under L. B.

Calif., Susanville—GRANDSTAND—Lassen Co., Courthouse, Feb. 28, 2,400 seating, steel, cement floor grandstand at Lassen County Fairgrounds, from B and B Steel Electors, 532 39 St., Alameda, $63,121. CD 2/15—ENR 2/17.

Minn., Fairbault—STEAM TUNNEL—State, Dpt. Administration, State Capitol, St. Paul, Feb. 28, general contract steam tunnel for State School for Blind, from Peterson Constr. Co., 616 National Bldg., Minneapolis, $57,300.

N. D., Grand Forks — GENERATING EQUIPMENT — Minnkota Power Co-operative, Grand Forks, Feb. 24, generator for power plant from DeLaval Steam Turbine Co., 853 Nottingham Way, Trenton, N. J., $336,600 •••condenser from Northwestern Power Equip. Co., 2295 University Ave., St. Paul, Minn., $58,666. CD 2/16—ENR 2/24.

†**Wyoming**—CIRCUIT BREAKERS—Bureau Reclamation, Dpt. Interior, Bldg 1-A, Denver Federal Center, Denver, Colo., Mar. 1, Schedule 1, three 115,000 volt circuit breakers for Boysen Switchyard, Spec. 2527, Missouri River Basin Proj. from Pacific Electric Mfg. Corp., 5818, 3rd St., San Francisco, Calif., $52,220.

†**Wyoming**—TRANSFORMERS, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Mar. 1, Schedule 1, item 1, one 10,000 kva auto transformer with three 69,000 volt lightning arresters; Schedule 1, item 2, one 10,000 kva transformer with three 34,500 volt lighting arresters Spec. 2526, Missouri River Basin Proj. from Westinghouse Electric Corp., Gas & Electric Bldg., Denver, Colo., $44,632 and $53,168 respectively•••Schedule 3, three 115,000 volt circuit breakers, Schedule 4, three 69,000 volt and five 34,500 volt circuit breakers, for Thermopolis substations from Pacific Electric Mfg. Corp., 5818, 3rd St., San Francisco, Calif., $52,220 and $60,900 respectively. CD 2/23.

CONTRACTS AWARDED

Ala., Athens—TRANSMISSION LINE—City, Athens, 25 mi. electric transmission line and conversion of 19 mi. line, to Victory Electric Co., 266 St. Michael St., Mobile, Ala., $50,700. Ladd Engrg. Co., 209 Wood Bldg., Ft. Payne, engrs.

●**Ala., Montgomery**—LIVESTOCK COLISEUM—State Bldg. Comn., 702 Washington St., livestock coliseum for State Agricultural Dpt., to J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., $1,560,000. Bids 2/18. CD 2/23—ENR 3/3, under LB.

Arkansas—RURAL DISTRIBUTION LINES—First Electric Co-operative, Corp., Jacksonville, 123 mi. rural distr. lines, Pulaski Co., to Southern Line Constr. Co., 62 Auction Ave., Memphis, Tenn., $161,752. Chanaberry Engrg. Co., Inc., 1516 Washington Bldg., Louisville, Ky., engr. CD 1/21—ENR 1/27.

Calif., San Francisco—TERMINAL SUBSTRUCTURE—Bd. State Harbor Comrs., Ferry Bldg., substructure, incl. concrete piles, etc. for Mission Rock Terminal at Pier 50, to Clinton Constr. Co., 923 Folsom St., San Francisco, $152,900. Bids 3/2.

Florida—RURAL DISTRIBUTION LINES—Withlacoochee Co-operative, Dade City, rural distr. lines impry. and extens., for addnl. service to present and future customers, Pasco. Owner builds, $290,000. CD 12/1/47—ENR 12/11/47.

Mo., St. Louis—STREET LIGHTING—City, Milton M. Kinsey, pres. Bd. P. Service, 304 City Hall, repair, maintenance street lighting sys., to R. J. McManemin, 3025 Brentwood Blvd., Brentwood, St. Louis, Zone 17, $552,303. CD 3/1—ENR 3/10, under LB.

B. C., Brentwood & Mill Bay—FERRY LANDINGS—Province of British Columbia, Parliament Bldg., Victoria, timber ferry landings, to Pacific Pile Driving Co. Ltd., 706 Fort St., Victoria. Approx. $71,586.

Georgia—POWER LINES—Rayle Electric Membership Corp., Washington, 303.89 mi. rural power lines in Greene, Hancock, Lincoln, Oglethorpe, Taliaferro and Wilkes Counties to Stuart Irby, 815 S. State St., Jackson, Miss., $322,614. Bids 3/8. CD 2/26—ENR 3/3.

Georgia—RURAL DISTRIBUTION LINE—Stailla Rural Electric Membership Corp., Alma, 400 mi. rural distr. lines, Bacon Co., to Alrich Electric Constr. Co., 630 11 St., Augusta, $463,-399. Marcus C. Long, Alma, engr. CD 10/14—ENR 10/28.

Illinois — RURAL DISTRIBUTION LINE — Spoon River Electric Co-operative, Inc., Canton, 1,108.2 mi. rural distr. lines, Fulton Co., to Miller Constr. Co., Linton, Ind., $156,826. Stanley Engr. Co., Muscatine, Ia., engrs.

Ill., Belleville — DRIVE-IN THEATER — Bloomer Amusement Co., c/o Ritz Theatre, 403 E. Main St., 750 car capacity drive-in motion picture theatre on 24 acre tract on South 56 (State Route 161) west of Main St. incl. 75 ft. screen tower, screen 46x60 ft., projection booth, concession stands, walks, drives, ramps, in-a-car speakers, and recreation center for children, own forces. Over $200,000. George M. Peterson, Cleveland, O. engr. CD 8/18—ENR 9/2.

Ill., Gordons Junction (Robinson, P. O.)—DRIVE-IN-THEATRE — Sky View Amusement Co., Harry Jones, pres., Lawrenceville, drive-in theatre, 10 acre site, H. L. Musgrave property, 2 mi. east of Robinson. Owner builds. Approx. $100,000.

Ill., Wood River — GRANDSTAND and LOCKER—School Dist., 144 Madison Co., F. G. Dykeman, secy., East Alton, Wood River Community High School, general contract grandstand and locker, East Alton-Wood River Community High School to R. & R. Constr. Co., 735 Park Dr., Alton, $51,696. Est. $70,000. S. T. Pabst & Assoc., Goldman Bldg., East St. Louis, archts., CD 5/17/46—ENR 5/23/46.

Iowa — RURAL DISTRIBUTION LINE — Southern Iowa Electric Co-operative, Bloomfield, 85.2 mi. rural distr. lines, Davis Co., to Stewart, Inc., Anamosa, $114,647. Stanley Engr. Co., Muscatine, engrs.

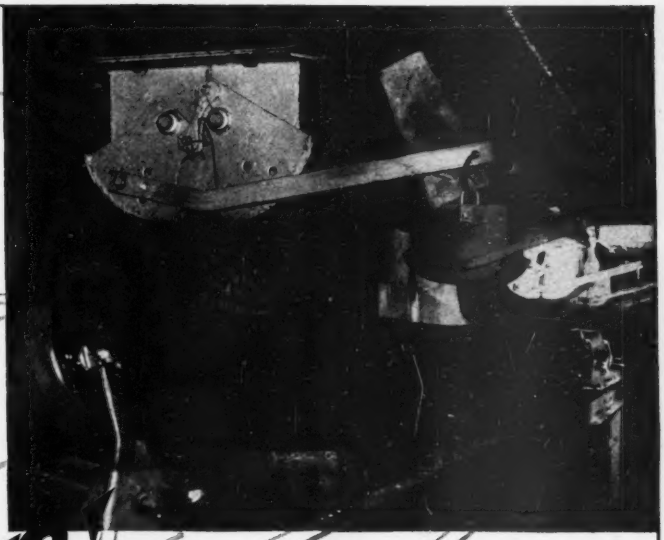
Kansas—RURAL DISTRIBUTION LINES—Pioneer Co-operative Assn., Inc., Ulysses, 143 mi. rural distr. lines, Grant Co., to A. F. Reid, 702-4 National Bank Bldg., Topeka, labor, $34,-763, materials, $143,000. Total, $177,763. CD 12/28.

Kansas—RURAL DISTRIBUTION LINES—Smoky Valley Electric Co-operative Assn., Inc., Lindsborg, 75 mi. rural distr. lines, McPherson Co., to A. F. Reis, 702-4 National Bank Bldg., Topeka, labor, $23,379, materials, $75,000. Total, $98,379. Richardson Electric Engrs. Co., P. O. Box 263, Solomon, engr.

Kansas—RURAL DISTRIBUTION LINES—Sugar Valley Electric Co-operative Assn., Inc., Mound City, 171.21 mi. rural distr. lines Linn Co., to James H. Drew Corp., 528 Architects & Builders Bldg., Indianapolis, Ind., labor $62,448, materials, $171,000. Total, $233,448. CD 12/7.

Kentucky—RURAL DISTRIBUTION LINES—Henderson Union Rural Co-operative Corp., Henderson, 125 mi. rural distr. lines, Henderson Co., to Real Electric Co., Owensboro, $174,421, Chanaberry Engrg. Co. Inc., 1510 Washington Bldg., Louisville, Zone, 2, engr. CD 8/23—ENR 9/9.

AGGREGATE IS A NOTORIOUS GATE CRASHER!

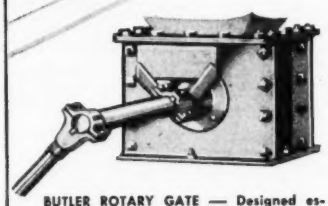


TREMENDOUS impact and tremendous wear, — those are the forces against which all gates on concrete plants, batching plants and sand and gravel plants must fight.

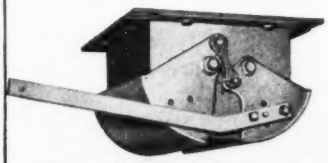
High volume production demands filling and discharge gates that operate smoothly, quickly and accurately; — gates *engineered* to take punishment and like it.

Long-lived BUTLER Gates are jam-proof and clog-proof. And quick-acting BUTLER Gates actually increase an operator's speed, — all characteristics that mean a welcome, extra profit.

BUTLER foresaw the upward swing in concrete production and diverted critical steel to building a stock of gate equipment. A limited stock, — it's true, for steel deliveries are still uncertain, — but for those who place their orders now, immediate shipments are possible.



BUTLER ROTARY GATE — Designed especially for handling cement. Carefully machined rotor fits tightly yet operates easily, — allows no leakage. Rotor may be removed for cleaning.



BUTLER CLAMSHELL GATE — Ideal for sand, gravel, crushed stone. All steel construction, electric arc welded. No cast gears to break or jam. Easily and quickly operated by a simple, fast-acting toggle.

BUTLER BIN COMPANY

WAUKESHA, WISCONSIN

FOUNDATIONS

PRETEST UNDERPINNING
CONCRETE-STEEL PILES
MASS CONCRETE CONSTRUCTION
HEAVY SHORING
DRILLED-IN CAISSONS

Send for catalogs descriptive of the latest foundation types and methods

SPENCER, WHITE & PRENTIS, INC.
10 EAST 40th ST. NEW YORK 16, N. Y.
602 HAMMOND BLDG. DETROIT 26, MICH.

REACH OUT
REACH UP..

with GLEDHILL'S "Hi-Lift" NEW ROAD GRADER

Good for high banks, advanced, simplified leaning wheel construction

Pneumatic Tires . . . self-locking, raising and lowering device . . . automotive type steering gear . . . all gears in oil-tight gear cases . . . Timken tapered roller bearings.

Write for detailed specifications on this and other Gledhill Road Machinery

THE GLEDHILL ROAD MACHINERY CO.
GALION, OHIO

Kentucky—RURAL DISTRIBUTION LINES—Pennyville Rural Electric Co-operative Corp., Hopkinsville, 197.31 mi. rural distr. lines, Todd Co., to Smith Constr. Co., 1156 Broad St., Nashville, Tenn., **$275,528.** P. M. Sullivan, 905 Stahlman Bldg., Nashville, Tenn., engr. CD 10/22—ENR 11/4.

Mississippi—RURAL DISTRIBUTION LINES—Pontotoc Electric Power Assn., Pontotoc, 156.66 mi. rural distr. lines, Pontotoc Co., to Trane-Electric Co., 106 E. Broadway, Louisville, Zone 2, Ky., **$194,647.** William E. Mailett & Assoc., Jackson, engrs., CD 6/10—ENR 6/17.

Ky., Paducah — DRIVE-IN-THEATRE — Columbia Amusement Co., L. F. Keller, pres., Paducah, drive-in theare, outskirts of city. Owner builds. **$200,000.**

Ky., Whitesburg — DRIVE-IN-THEATRE—Dr. B. F. Wright, Seco, drive-in-theatre, U. S. Hy. 119, adjacent to Solomon Creek. Owner builds. Est. **$100,000.**

Missouri—RURAL DISTRIBUTION LINES—Grundy Rural Electrica Co-operative, Trenton, labor only, 230 mi. rural distr. lines, Harrison and Mercer Counties, to C. & S. Constr. Co., Shelbina, N. C., **$116,724.** CD 7/1—ENR 7/22.

Mo., Fulton—POWER PIPING, etc.—City, City Hall, power piping and circulating water piping, municipal power plant, to Moffitt & Troup, 4 Smithfield St., Pittsburgh, Pa., **$56,344.** CD 12/2—ENR 1/6.

Nebraska—RURAL DISTRIBUTION LINES—Niobrara Electric Membership Assn., Hay Springs, 2 11.91 mi. rural distr. lines, Dawes and Sheridan Counties, to R. M. Campsey Constr. Co., 25020 Leyton St., Denver, Colo., **$251,411.** CD 2/3/48—ENR 2/19/48.

N. Y., Port Washington — DOCK — Town of North Hempstead, Plandome Rd., Manhasset, dock addn. to Hendrickson Bros. Inc., 63 North Central Ave., Valley Stream, **$134,777.** Bids 2/15. CD 2/2—ENR 2/10.

North Carolina — RURAL DISTRIBUTION LINES—Union Electric Membership Corp., Monroe, 81 mi. rural distr. lines and converting 49.7 mi. line, Union Co., to E. C. Bridges, Heath Springs, S. C. **$215,536.** Bids 11/16. CD 11/5—ENR 11/11.

Oklahoma—RURAL DISTRIBUTION LINES—Cookson-Hills Electric Co-operative, Inc., Stigler, 38 mi. rural distr. lines, Haskell Co., to Weber & Thompson, 2411 Inwood Dr., Dallas, Tex., labor $12,627, materials, $38,000. Total **$50,627.** George C. Henry & Co., 1007½ Texas Ave., Shreveport, La., engr.

Okla., Norman — STADIUM — University of Oklahoma, Norman, stadium addn. to Harmon Constr. Co., 1138 N.W. 4 St., Oklahoma City, **$970,238.** Bids 2/7. CD 2/11—ENR 2/17. under LB.

South Dakota — RURAL DISTRIBUTION LINES—Butte Electric Assoc. Inc., Newell, 131.75 mi. rural distr. lines, Butte Co. to Ferguson-Diehl Constr. Co., Home State Bank Bldg., Jefferson, Iowa, labor, $39,645, materials, $131,000. Total **$170,645.** CD 11/19/47 — ENR 12/11/47.

South Dakota — RURAL DISTRIBUTION LINES—Moreau-Grand Electric Assn., Timber Lake, 34 mi. 69 kv. transmission line, to Hallott Constr. Co., Crosby, Minn., **$152,303.** Scott Eng. Co., Watertown, engr. CD 8/21/47—ENR 9/18/47.

Tenn., Memphis—POWER LINE—Memphis Light, Gas & Water Div., Memphis, exten. 115 kva power line serving South Memphis, to Shelby Electric Co., 112 E. Iowa Ave., **$678,500.** CD 2/28—ENR 3/3, under LB.

Texas—GAS LINES—United Gas Pipe Line Co., 1525 Fairfield Ave., Shreveport, La., connecting pipelines in Coy City gas field area, Karnes City area, **$100,000;** laying natural gas mains, Laredo area, **$225,000,** force account. CD 12/1—ENR 12/30.

Tex., Carthage — GAS WELLS — Chicago Corp., Carthage, drilling, developing 4 deep earthen wells storage for propane gas, force account. **$80,000.**

Tex., Houston—STREET LIGHTING—Houston Lighting & Power Co., 1016 Walker St., street lighting sys. extens., cables and 800 lights, etc., Purchase and Hire. Approx. **$375,000.** CD 2/25—ENR 3/10.

Tex., San Antonio—FEEDER LINES, etc.—City Public Service Board, 201 N. St. Marys St., gas feeder lines. Approx. **$377,200** and street lighting in outlying districts. Approx. **$80,000,** force-account.

Virginia—RURAL DISTRIBUTION LINES—Shenandoah Valley Electric Co-operative, Dayton, 6 mi. 3 phase tie line and converting 43 mi. rural distr. line, Rockingham Co. to Rockingham Constr. Co., 394 N. Main St., Harrisonburg, **$109,670.** Kinsley, McWharter & Assoc., Staunton, engrs. CD 1/30/47—ENR 2/20/47.

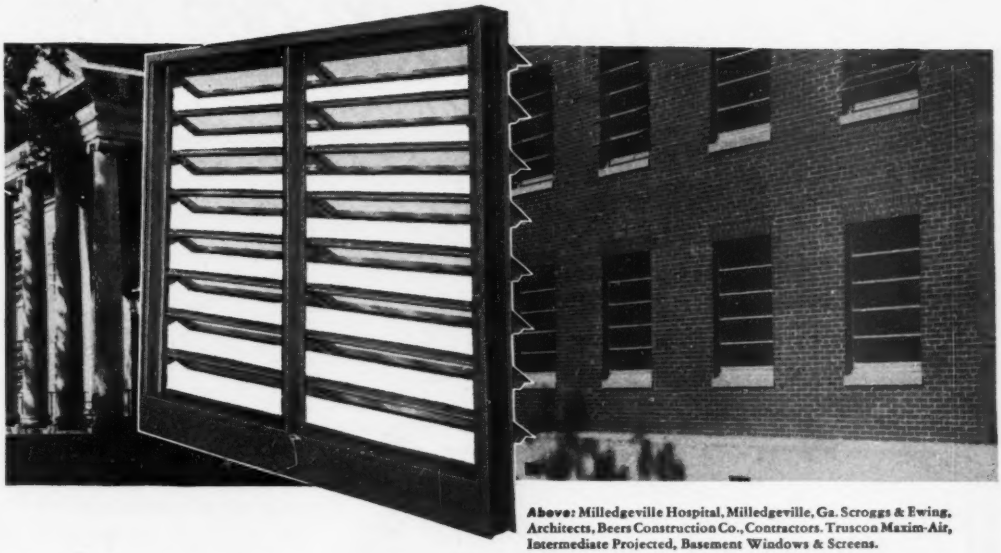
Alta., Edmonton—GAS PIPELINES—North Western Utilities Ltd., Edmonton, 39,000 ft. main piping, 64,000 lead in piping, gas service to West Jasper Pl. area. Owner builds. **$100,000.**

British Columbia — DIKE — Fraser Valley Dyking Bd., 123 W. Pender St., Vancouver, dike, Tilbury Island, to R. G. Guiliami, Ladner. **$75,000.**

B. C., Victoria—PARK DEVELOPMENT—Province of British Columbia, Victoria, park development, incl. roads, lodges, chair lift for skiers. Owner builds, **$328,000,** Dpt. Lands & Forests, Victoria, engrs.

Que., Levis—WHARF—Dominion Govt., Hunter Bldgs., Ottawa, Ont., repairing wharf, east side Levis Ferry, day labor, **$300,000.** CD 8/23/45—ENR 8/30/45.

basis for beauty



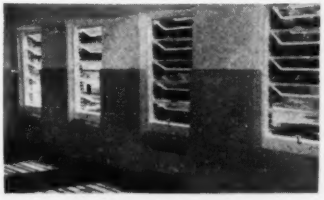
Above: Milledgeville Hospital, Milledgeville, Ga. Scroggs & Ewing, Architects, Beers Construction Co., Contractors. Truscon Maxim-Air, Intermediate Projected, Basement Windows & Screens.

Streamlined Truscon Maxim-Air Steel Windows

● All ventilators are top-hinged to open out, are mechanically controlled and open or close simultaneously by a completely concealed mechanism. The resulting elimination of unsightly arms and shafts permits the most convenient and effective arrangement of shades, screens and draperies.

Truscon Maxim-Air Steel Windows are ideal for use in warm climates, enclosed porches, solariums, or in any structure wherein it is important to provide free circulation of air in inclement weather as well as on sunshiny days. Detention type windows in this design can be made with glass heights as low as five or six inches for use in psychiatric institutions.

This unique Truscon development is offered in a wide range of designs and sizes. Architects are thus assured of an opportunity to design their requirements around specific needs without unduly restrictive limitations as to unit size and ventilator layout.



Above: Interior view of Milledgeville Hospital, illustrating complete concealment of operating mechanism on Truscon Maxim-Air Windows.

Above: Exterior view of Milledgeville Hospital, showing Truscon Maxim-Air Windows in open position.

FOR COMPLETE DETAILS and specifications, write for free catalog complete with installation data on Truscon Steel Windows for every type of commercial, institutional, industrial and residential use.

Truscon Steel Company • Youngstown 1, Ohio
SUBSIDIARY OF REPUBLIC STEEL CORPORATION

TRUSCON'S STEEL WINDOW LINE INCLUDES ALL CONVENTIONAL TYPES PLUS EXCLUSIVE TRUSCON DESIGNS

A Story no one else

(WITH A HONEY OF A MORAL!)

IF you're interested in savings, you'll want to hear the savingest story in the U. S. A.

For 62 years American Mutual has never failed to pay policyholders dividends, a record second to none . . .

Through depressions, recessions, wars and panics . . . Even today with rising costs, we still offer the chance for substantial savings.

If you're interested in round figures . . . We've saved policyholders more than $123,000,000 — which is fairly round!

The point is . . . are you saving as much as you should on your own workman's compensation insurance and your employees' group accident and health policies? Are you getting your share?

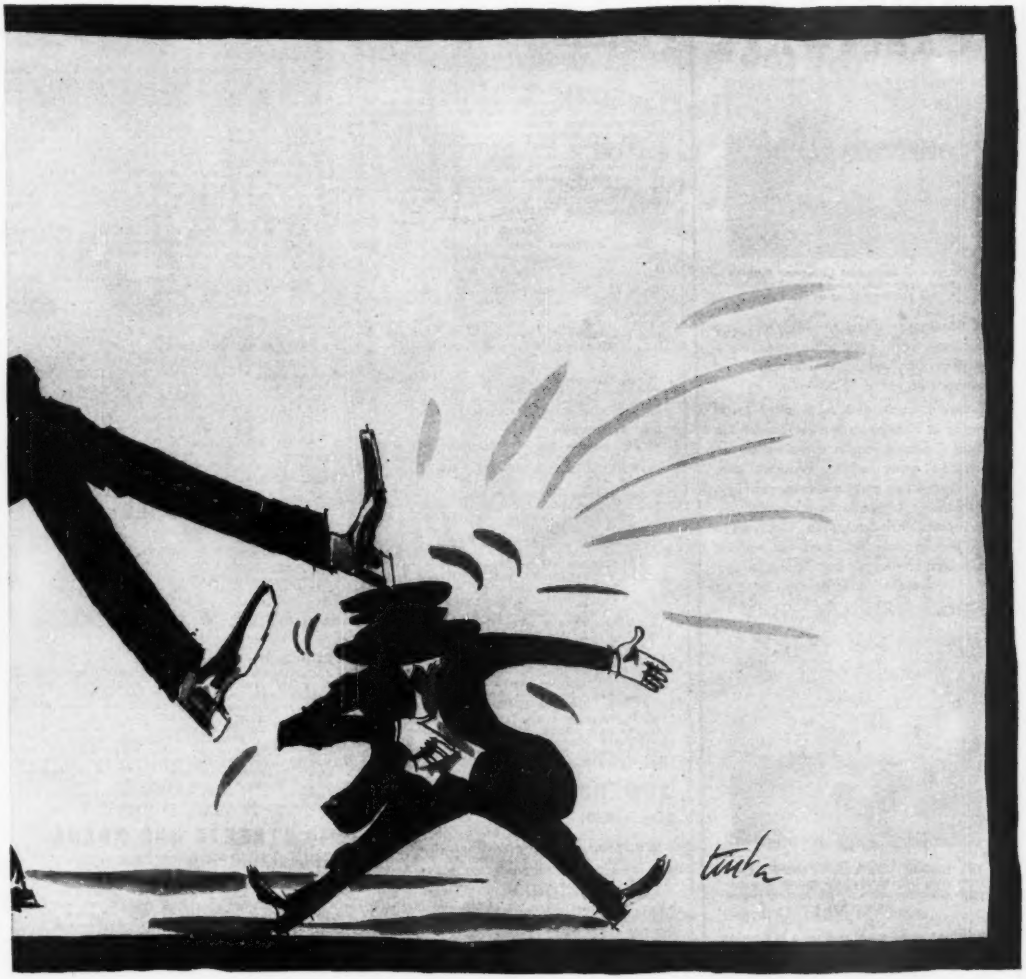
No other liability insurance company in America can match our long time record for savings . . .

If you like to mull . . . isn't this record worth mulling over? And, if you want to mull more . . . American Mutual's Specialized Engineering Construction Service helps reduce accident hazards

AMERICAN MUTUAL... the first American liability insurance company

© 1949 AMERICAN MUTUAL LIABILITY INSURANCE COMPANY

can tell!... by Mr. Friendly



. . . speeds up construction . . . reduces premium costs.

And it's included at no extra cost with every industrial policy! If you want the stability of America's oldest liability company . . . the savings that mean real insurance economy . . . and the extra service that few can match . . . better insure with American Mutual.

A M

P. S. Send today for 2 free illustrated textbooks "Surface Construction Without Accidents" and "Foremanship and Accident Prevention in Construction."

MAIL THIS COUPON NOW — WITHOUT DELAY!

Dept. O-79, American Mutual Liability Insurance Co.
142 Berkeley Street, Boston 16, Massachusetts

Without obligation, please *rush* to me more information on the All-American Plan, so that I may be richer and happier!

*Name*_____

*Street*_____

*City*_____ *State*_____

material handling
at lower cost —
With One-Man Operated
SAUERMAN CABLEWAYS

Here is a Sauerman Cableway digging gravel from lake and keeping screening plant supplied at low cost.

A Sauerman Slackline Cableway can increase your output on many excavating jobs while conserving your manpower.

Ranging back and forth over large areas is a digging bucket suspended from a trolley carrier traveling on an inclined track cable. Working continuously, the machine digs, conveys, elevates and dumps in a rapid cycle of operation. Sauerman Cableways deliver a capacity payload with a minimum of cost per cubic yard, in any kind of material, wet or dry, loose or sticky.

This Sauerman Cableway is lifting gravel from river-bed to loading hopper on railway. Operator has easy job loading twelve cars a day.

Only one easily trained man is needed to control the complete operation of the machine. Because of the extremely simple construction, wearing parts are few and maintenance easy. Power consumption, either gasoline, electricity or Diesel is surprisingly small on the basis of tonnage handled.

WRITE TODAY FOR CATALOG SHOWING MANY TYPICAL INSTALLATIONS AND COMPLETE INFORMATION.

SAUERMAN BROS., Inc.
532 S. Clinton St. Chicago 7, Ill.

CONSTRUCTION REPORTS— Third Section

WATER SUPPLY

BIDS ASKED

March 24

Conn., Hartford—Metropolitan Dist. Water Bureau, Bd. Contr. & Supply, 650 Main St., furnishing 460 tons rein. forcing steel. Contr. 151. Robert Ross, 2 American Row, Hartford, engr.

March 29

La., Gretna—City, c/o C. F. Gelbke, mayor, City Hall, installing 57,300 lin. ft. 6- to 12-in. c.i. water lines. Plans deposit $25.

March 30

Md., Baltimore—Mayor & City Council, City Hall, 12,500 ft. and 30 and 48 in. watermains, appurtenances, under water sections, across Harbor and Patapsco River, 7,000 lin. ft. to be 48 in. flexible joint Metropolitan type c. i. pipe, 4,500 ft. in trench on pile supporting structure, balance in trench land portion to be 48 in. precast rein.-con. pressure pipe. Lazaretto-Fort McHenry, Fairfield Water Mains. Plans deposit $10. L. Small, water engr. CD 12/17/45—ENR 12/27/45.

March 31

Miss., Gulfport—City, c/o City Clk., City Hall, exten. watermains. CD 9/2.

April 4

N. Y., Washingtonville—at office E. J. McLaughlin, village clerk, Washingtonville, laying 7,000 lin. ft. 8 in. c. i. watermain, replacing 1,600 sq. yd. pavement, etc. Plans deposit $15. Harry C. Carpenter, 218 Wisner Ave. Ext., Middletown, engr.; adv. ENR 3/24.

April 6

Tex., Houston—City, M. H. Westerman, secy., new buildings at Northeast Water Pumping Station and yard piping in area. $490,000. CD 6/30/44—ENR 7/13/44.

LOW BIDDERS

Tenn., Carderview—Carderview Utility Dist., Carderview, Mar. 8, WW improvs., from Alley Constr. Co., Bristol, **$61,931.** CD 2/15—ENR 2/17.

Tex., Farmers Branch—City, City Hall, Mar. 8, water distr. sys., from E. L. Dalton & Co., 3002 Hawes St., Dallas, **$42,672.** CD 2/16—ENR 2/24.

Tex., Lockney—City, R. L. Maggard, mayor, Mar. 1, WW sys. imprvs., from S. E. Lanier, Haskell, **$56,400.** H. N. Roberts & Assoc., 1310 Avenue Q, Lubbock, engrs. CD 1/19—ENR 2/3.

Tex., Luling—City J. N. Brignance, mayor, Mar. 11, water distr. sys., from Ferguson Constr. Co., 5006 2 Ave., Dallas, **$44,857.** Est. $30,000. CD 2/28—ENR 3/3.

CONTRACTS AWARDED

●N. M., Los Alamos—U. S. Atomic Energy Comm., Los Alamos, water supply imprvs., to Robert Nurseries, Inc., Los Alamos, **$144,302.** Bids 2/23. CD 2/8—ENR 2/10.

N. C., Shelby—City, H. S. Woodson, mayor, changes and addns. to aw water supply sys., to Gilbert Engr. Co., Statesville, **$123,000.** J. N. Pease & Co. Inc., 119½ E. 5 St., Charlotte, engr. Bids 3/4.

SEWERS, WASTE DISPOSAL

BIDS ASKED

March 21

N. J., Livingston—Town, sewerage sys. $160,000. Bowe, Albertson & Assoc., 110 William St., New York, N. Y., engrs. CD 10/17/45—ENR 11/1/45.

March 30

●Tex., Houston—City, M. H. Westerman, secy., enlarging Northside Sewage Treatment Plant and construct plant to mfg. fertilizer. $1,000,000. Extended date. J. N. Nagle, city engr. CD 3/8—ENR 3/10.

March 31

Tex., San Antonio—City, Sect. 3, 19,700 lin. ft. 36 in. Salado Creek sanitary sewer main. $275,000. Plans deposit $25. Beavers & Lodal, 1422 Transit Tower, engrs. CD 12/15/47—ENR 12/25/47.

April 19

Conn., Bristol—City, R. E. Rowe, clk., City Hall, Sewers Contr. 6, 15,000 ft. 8-to 24-in. sewers and 2,400 ft. 10 in. c.i. force main. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., engrs.

About May 1

Ala., Montgomery—City, sanitary sewer imprvs. $800,000. Roy Garrett, Shepard Bldg., Montgomery, engr. CD 12/3—12/12.

LOW BIDDERS

Ariz., Phoenix—City, 1 Ave. and Washington St., sanitary sewer addns. to city sys., from Peter J. Foskin Constr. Co., 2329 E. Brill St., **$61,547.** CD 11/29/46—ENR 12/12/46.

Colo., Wheat Ridge—Town, Mar. 8, sewers for South Dist., from Jones & Hezlep, Tabor Bldg., Denver, **$145,635,** est. over $50,000; in North Dist., from Schmidt Constr. Co., Grand Junction, **$438,863,** est. over $28,000; sewage treatment plant, from J. B. Kenney, 3233 Osage St., Denver, **$159,387,** est. over $50,000. CD 3/14—ENR 3/24.

Kan., Sterling—City, City Hall, rejected bids Mar. 3, sewage plant L. B. **$105,500.** CD 2/16—ENR 2/24.

Md., Baltimore—Mayor & City Council, City Hall, Mar. 9, brick, concrete, steel Jones Falls Sewage Pumping Station, from The Frank Angelozzi Constr. Co., 123 S. High St., **$503,978.** CD 2/25—ENR 3/3.

Mass., Framingham—Town, Comr. P. Wks., Memorial Bldg., Mar. 7, sewage pump. station, Lokerville Station, Contr. 2, from Westcott Constr. Co., 52 N. Washington St., North Attleboro, **$52,349.** CD 2/25—ENR 3/3.

Mo., Clayton (St. Louis, Zone 5, P. O.)—City, C. W. Niedner, clk., City Hall, Mar. 8, 2- to 12-in. vitr. clay and rein.-con. storm sewers, East Moorlands Sect., from W. A. Blue Co., 7820 Forsyth St., Clayton, **$80,079;** 12- to 48-in. vitr. clay and rein.-con. storm sewers, DeMun and Wydon Sects., from R. & S. Constr. Co., 7501 Delmar Blvd., University City, St. Louis, Zone 5, **$104,660.** CD 3/2.

Tex., Dallas—City, Earl Goforth, secy., storm sewers in Edgefield Ave., from Austin Road Co., 1,000 Singleton Blvd., **$112,044.** CD 12/1/48—ENR 12/23/48.

Tex., Taylor—City, sewage disposal plant addn., alterations, from Taylor Constr. Co., P. O. Box 648, Taylor, **$76,780.** The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, engrs.

CONTRACTS AWARDED

Calif., San Francisco—Dpt. P. Wks., City Hall, Lake Merced Sewer Sect. C, Spec. 20,340, to M. & K. Corp., 405 Montgomery St., San Francisco, Fredrickson & Watson Constr. Co., 872 81 Ave., Oakland, and Piombo Constr. Co., 1571 Turk St., San Francisco, **$916,485.** Bids 3/2. CD 3/8—ENR 3/10, under L.B.

N. M., Albuquerque—City, Ernest W. Everly, mayor, City Hall, sewage disposal plant, to Allison & Haney, Albuquerque, **$172,699.** Bids 3/1. CD 2/22.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

March 24
Michigan
March 25
Georgia
Kentucky
March 29
Wisconsin

April 7
California
New Jersey
April 22
Alabama

LOW BIDDERS

California—State Div. Hys., Sacramento, Mar. 9, steel beam and steel plate girder bridge and grading, selected material surf. 0.3 mi. approaches across Dillion Creek about 27 mi. north of Orleans, Siskiyou Co., from G. M. Carr & Rocca, 2333 Burbank Ave., Santa Rosa, **$166,132;** bridge, widening culvert and widening plant mix. surf. 0.3 mi. hy. width at Laguna de Santa Rosa and at Purple Draw between east city limits of Sebastopol and 1/3 mi. east of Sebastopol, Sonoma Co., from A. G. Raisch Co., 2048 Market St., San Francisco, **$58,880.** CD 2/14—ENR 2/17.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

March 22
Colorado
Illinois
Wisconsin
March 24
Arizona
Michigan
March 25
Georgia

March 29
Wisconsin
April 6
California
April 7
California
April 22
Alabama

March 24

Tex., Corpus Christi—Nueces Co., George A. Prowse, judge, Courthouse, road constr. on Padre Island, Proj. 1, Park 1. $75,000. J. T. Laurence, co. engr. CD 12/27—ENR 1/20.

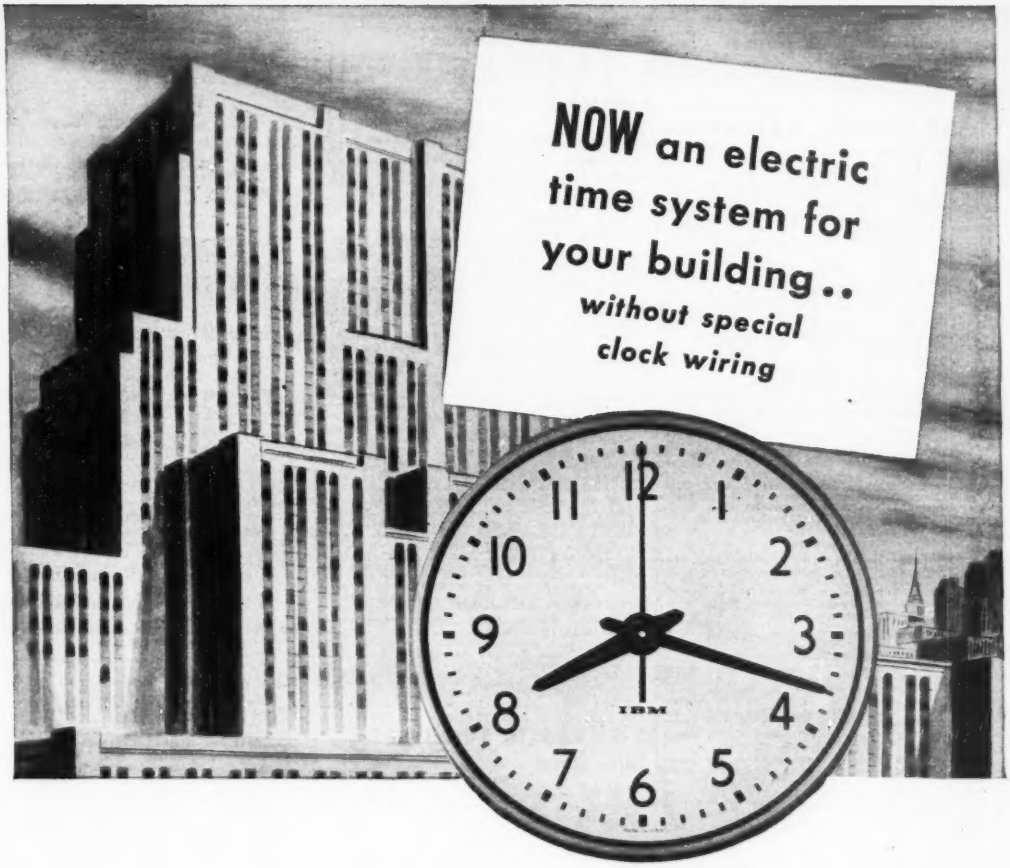
LOW BIDDERS

Tex., Beaumont—Jefferson Co., Courthouse, reconstructing, grading, surf. Sabine Pass, Sabine, Jetty and River Rds. from R. B. Smith, 2301 Southgate St., Houston, **$57,923.** Charles L. Davidson, co. engr.

Tex., Fort Worth—City, W. O. Jones, city mgr., Mar. 8, wid'n., asph. Sylvania Ave., from Texas Bitulithic Co., N. W., 24 St., **$317,657.** Est. $235,000. CD 2/24.

CONTRACTS AWARDED

Calif., Santa Ana — Jennie A. Cruteher Foundation, Inc., c/o Lester Boyle, engr., 328 Spurgeon Bldg., curbs, gutters and streets in Tract 1237, to Sully-Miller Contr. Co., 1500 W. 7 St., Long Beach, **$54,762.** Bids 2/2.



Every clock in the building or plant showing the same uniform time to the second; signals ringing in synchronism according to any schedule; time recorders and time stamps uniform with system time—this is the new IBM Electric Time System with Electronic Self-regulation.

This is the great advance in time control which utilizes electronic principles. Clocks are merely connected to the nearest 60-cycle AC current, and are self-regulated continuously and automatically day after day, year after year, WITHOUT SPECIAL CLOCK WIRING.

The same time on every clock, on every signal, on every recorder—a real contribution to efficient coordination in your office building, school, hospital, plant, or hotel.

Call your local IBM office today or write to the address below for additional information.

IBM

TIME RECORDERS AND ELECTRIC TIME SYSTEMS
Proof Machines • Electric Punched Card Accounting Machines and Service Bureau Facilities • Electric Typewriters

International Business Machines Corporation, World Headquarters Building, 590 Madison Avenue, New York 22, N. Y.

Okla., Tulsa—City, wtd'n. Peoria Ave. from 21 to Latimer Sts., to Layman & Co., Riverside Dr., **$228,284.** Est. $229,178. CD 3/5—ENR 3/10, under LB.

Tex., Houston—Harris Co., Hugh A. May, comr. Precinct 2, Courthouse, road constr. and asph. surfacing 4 mi. Ramsey Rd. Purchase and Hire, **$72,000.** Hugo Zapp, co. engr. CD 8/28/47—ENR 9/18/47.

EARTHWORK, WATERWAYS

BIDS ASKED

March 28

Tex., Highlands—San Jacinto Conservation & Reclamation Dist., c/o C. A. Deese, secy., Conroe, reservoir imprvs. incl., 168,000 cu. yd. embankment, appurtenant structures, $35,000. Freese, Nichols & Turner, 2111 Natl. Standard Bldg., Houston, Zone 2, engrs.

March 30

Pennsylvania—Dpt. Forests & Waters, 404 Education Bldg., Harrisburg, two silt impounding basins on Schuylkill River Desilting Proj. Basin No. 15, Sanatoga Site and Basin No. 18, Lower Vicent Site, **$600,000.** Plans deposit $5 each. Schuylkill River Project Engineers, 20 S. 15 St., Phila., engrs.

April 5

†Wash., Everett—U. S. Engr., 4735 E. Marginal Way, Seattle Zone 4, dredging 110,450 cu. yd. material from shoal areas in harbor.

April 8

†Colorado—Bureau Reclamation, Dpt. Interior, Bldg. 1-a, Denver, Federal Center, Denver, completion Granby Pump Canal, Station 111 plus 00 to Station 158 plus 70, Colorado-Big Thompson Proj. about 12 mi. north of Granby, Spec. 2554. Extended date, L. N. McClellan, ch. engr. CD 2/2—ENR 3/10.

April 12

†Montana—Bureau Reclamation, Dpt. Interior, Hungry Horse Govt. Camp, relocation forest service road, Sect. 2, Station 0 plus 00 to Station 881 plus 00 Hungry Horse Reservoir, 25 mi. southeast Columbia Falls, Spec. 2602. L. N. McClellan, ch. engr.

April 14

†Colorado and Kansas—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, furnishing, del. f.o.b. cars shipping point or f.o.b. cars St. Francis, Kan., two 24 in. hollow jet valves with 2 control stands, 2 intermediate shafts and 1 set wrenches for outlet works at Bonny Dam, St. Francis Unit, Missouri River Basin Proj., Spec. 2606. L. N. McClellan, ch. engr.

†Nebraska and Kansas—Bureau Reclamation, Dpt. Interior, Superior, earthwork, canal lining, structures for Superior Canal, Station 10 plus 00 to 659 plus 50 and Pawnee Lake wasteway channel changes and intercepting drains, Missouri River Basin Proj., Bostwick Unit, near Guide Rock and Bostwick, Spec. 2598.

About April 19

†North Dakota—U. S. Engr., Fort Lincoln, P. O. Box 300, Bismarck, levee and appurtenant works, at Mandan, Serial No. Eng.-32-015-49-79.

Calif., Santa Ana—Bd. Supervs. Orange Co., Courthouse, Mar. 5, 5.86 mi. earth channel incl. bridges, appurtenant structures from south limits of Santa Ana to Newport Bay, from Charles T. Brown Co., 1955 Sixth St., San Fernando, **$122,768.** Est. $153,735. CD 2/25.

†Tex., Corpus Christi—Yards & Docks Annex, Navy Dpt., Arlington, Va., received no bids Mar. 7, dredging 36,00 cu. yd. Navy Crash Channel from Intracoastal Canal to Padre Island, $30,000.

†Virginia—U. S. Engr., P. O. Box 119, Fort Norfolk, Norfolk, Mar. 8, Schedule 1, tainter gates and embedded parts at Buggs Island Dam, Mecklenburg Co. Inv. Eng.-44-110-49-140, from Consolidate Steel Corp., Orange, Tex., **$497,857*****Schedule 2, tainter gates, from Richmond Eng. Co., 7 and Hospital Sts., Richmond, $387,882***Schedule 3, embedded parts, from Palmer-Bee Co., Westminster and G.T.R.R., Detroit, Mich., **$22,990*****Schedule 4, other parts, from Lakeside Bridge & Steel Co., 3200 W. Villard Ave., Milwaukee, Wis., **$56,704.** CD 2/7—ENR 2/17.

†Virginia—U. S. Engr., foot of Front St., Norfolk, Mar. 8, tainter gate operating mechanism at Buggs Island Dam, Mecklenburg Co., from Willamette Iron & Steel Co., 2860 N. W. Front St., Portland, Ore., **$286,067.** CD 1/24—ENR 2/3.

N. J., Long Beach Twp. (Brant Beach P.O.)—State Dpt. Conservation & Economic Development, State House Annex, Trenton, Jetty at Shore Rd., to Jesse A. Howland & Sons, Inc., 50 Church St., Sea Bright, **$66,729.** Est. $75,000. Bids 2/14, awarded 2/28.

†Washington—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., 26 stop logs, Columbia Basin Proj., Spec. 2540, item 1, to Pacific Car & Foundry Co., 120 W. Hudson St., Seattle, **$98,100,** f.o.b. Odair. Bids 2/17, awarded 2/8. CD 2/24—ENR 3/3, under LB.

AIRPORTS AND AIRBASES

BIDS ASKED

March 29

Mass., Gardner—City, J. J. Berlo, chn. Airport Comn., Gardner, access road, landing strip, Gardner Airport, Templeton. Plans deposit $25. Fay, Spofford & Thorndike, 11 Beacon St., Boston, engrs.

March 30

Mass., North Adams — AIRPORT — City, James A. Bowles, mayor, F. J. Noel chn. Airport Comn., North Adams, landing strip, airport. Over $50,000. Plans deposit $15. Fay, Spofford & Thorndike, 11 Beacon St., Boston, archts. CD 1/6—ENR 1/20.

LOW BIDDERS

●†Calif., Point Mugu—BARRACKS, etc.—R. Lamoreaux, Officer-In-Charge of Constr., U. S. Naval Air Missile Test Center, Point Mugu. Mar. 3, enlisted mens barracks, airfield hangar, telephone exchange bldg. and married officers' and enlisted men's quarters, spec. 20603, from Robert E. McKee, 4700 San Fernando Rd. W., Los Angeles, Item 1, **$1,586,900.** Parsons—Aerojet Co., 411 W. 5 St., Los Angeles, archt. and engrs. CD 2/10—ENR 2/17.

●Ill., Chicago — AIRPORT IMPRVS — City, Dpt. Purchases, Contracts & Supplies, City Hall, Mar. 9, terminal bldg., hangars clearance, runways, utilities, sewers, water supply sys., grading, parking apron, 15 mi. northwest of here, class VIII airport, Chicago International Express Airport, from Arcole Midwest Corp., 3225 Main St., Skokie, Chicago, **$3,093,022.** CD 2/23—ENR 2/24.

Tex., Harlingen—AIRPORT—City, Mar. 9, municipal airport administration bldg., from Cours & Larribee, San Benito, **$79,927.** John G. York, 1220 W. Harrison St., engr.

Wash., Seattle—AIRPORT—Port of Seattle, Bell St. Terminal, Zone 1, 22,500 sq. yd. concrete and 41,000 sq yd. asph. paving at Seattle-Tacoma Airport with timber curbs, piping, chain link fence and landscaping, from Lease & Leigland, Dexter Horton Bldg., Zone 4, **$367,114.** G. T. Treadwell, c/o owner, ch. engr.

CONTRACTS AWARDED

†Calif., Moffett Field (near Sunnyvale)—LABORATORY—National Advisory Com. for Aeronautics, Ames Aeronautical Laboratory, Moffett Field, 2 story 112x156 ft. rein.-con., Ames Instrument Research Laboratory, Inv. A-325, to Carrico & Gautier, 365 Ocean Ave., San Francisco, **$566,067.** Bids 2/24. CD 3/5—ENR 3/10.

PUBLIC BUILDINGS

BIDS ASKED

March 21

N. Y., Syracuse—Dpt. Parks, City Hall, administration bldg. alterations. $200,000. George H. Ketcham, 201 Water St., archt.

March 22

Md., Frederick—Frederick Memorial Hospital, Frederick, masonry, steel, concrete Baker Wing and Boiler House alterations, addns., new North Wing, $450,000. Plans deposit $25. J. R. Edmunds, Jr., 130 W. Hamilton St., Baltimore, archt. CD 2/2/48—ENR 2/19/48.

March 23

Conn., Willimantic—City, Luke Hevrin, chn. Willimantic Housing Auth., Harrington Ave., 16 frame duplex houses. A. H. Sharpe Willimantic, archt. CD 1/3.

March 24

N. Y., Hempstead—Bd. Educ., Union Free School Dist. 1, Hempstead, 2 school alterations. $625,000. Jagow & Heidelberger, 658 Fulton Ave., archts.

Tex., Marshall—Marshall Independent School Dist., Marshall, reconstructing masonry Dunbar (Negro) School and 2 classroom addns. $300,000. Extended date. Preston M. Geren, 905 M. P. Anderson Bldg., Fort Worth, archt. CD 3/7—ENR 3/10.

March 25

●Fla., Gainesville — State Bd. Control, c/o Reynolds, Smith & Hill, 227 Park St., Jacksonville, and Guy C. Fulton, 204 Peabody Hall, Gainesville, assoc. archts., engineering bldg. at University of Florida. Over $1,000,000. Plans deposit $35. Bid date changed. CD 3/24—ENR 3/10.

March 28

Pa., Natrona—School Dist. of Harrison Twp., Natrona, 2 story, 75x120 ft., brick school addn. at Birdville. $250,000. John H. Phillips, 23 Briarcliff Rd., Ben Avon, archt. CD 2/6/48—ENR 2/12/48.

March 29

Conn., Manchester—Town Bd. Educ., town mgr., Municipal Bldg., 1 story 19 room Bunce School, Olcott St., $700,000. Keith Sellers Heine, 73 Oxford St., Hartford, archt. Paul Bemis, 36 Pearl St., Hartford, engr. CD 3/3/48—ENR 3/8/48.

Miss., State Line—State Line Consolidated School Bd., c/o McNair & Archer, archts., Rosenbaum Bldg., Meridian, Consolidated School.

March 31

Mass., Westboro—Commonwealth of Massachusetts, Dpt. Mental Health, Dr. Clifton T. Perkins, comr., 100 Nashua St., Boston, renovation boiler plant, Warren Colony, Westboro State Hospital, Proj. M-113, Contr. 1. Plans deposit $10. Richard D. Kimball Co., 6 Beacon St., Boston, engrs. CD 8/14/44—ENR 8/24/44.

April 8

●N. Y., Fort Chester—Port Chester Housing Auth., City Hall, housing facilities. $1,100,000. Frederick G. Frost, 144 E. 30 St., New York, archt. CD 5/21/46—ENR 5/23/46, under LB.

April 9

Fla., Ft. Myers—Lee Co., Ft. Myers, Junior-Senior High School. Over $300,000. James A. Stripling, Child Bldg., Tallahassee, and Richard E. Jessen & Assoc., Ft. Myers, assoc. archts. CD 12/16—ENR 12/30.

April 12

O., Columbus—Ohio State University, N. High St., electrical engineering bldg. $750,000. Plans deposit $25. CD 3/4—ENR 3/17.

On or About April 15

†Ga., Augusta—U. S. Eng., Post Office Bldg., Savannah, Laboratory Bldg. 202 alterations, addns., Oliver General Hospital.

April 15

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, **100x200 ft. concrete** slab steel laundry bldg., Spec. **952.** Over $68,-000. R. E. Shonerd, ch. mech. engr. CD 1/17—ENR 2/27.

April 19

Calif., Calexico—Calexico Elementary School Dist. classrooms, administration bldgs., Rockwood School. $388,000. Extended date. Bowen, Rule & Bowem, 2853 Gilroy St., Los Angeles, Zone 28, engrs. CD 2/21—ENR 3/10.

On or About May 2

†Ga., Fort Benning—U. S. Eng., 2301 Grant St., Mobile, Ala., family-type quarters at Ft. Benning, Serial No. Eng-01-076-49-125. CD 8/16—ENR 9/9.

LOW BIDDERS

Ind., Cannelton—Bd. Comrs., Perry Co. Court House, Bd. Hospital Trustees, C. Zoercher, chn., Tell City, county memorial hospital, from J. D. Jennings, Corp., 235 E. Gaulbert St., Louisville, Ky., **$312,900.** Hawkins & Walker, Elsby Bldg., New Albany, archts. CD 1/26/48 — ENR 2/16/48.

†Md., Camp Detrick—U. S. Eng., 1 and Douglas Sts., N. W. Wash., D. C., 2 story row houses, Serial No. Eng. 49-080-49-76 (20)M, from B. & J. Constr. Co., 3432 Connecticut Ave. N. W., Wash., D. C., **$293,900.** CD 2/18—ENR 3/3.

Mass., Boston—City, Traffic Dpt., 134 North St., Mar. 9, traffic bldg., Southampton and Atkinson Sts., from M. S. Kelliher Co., 294 Washington St. **$476,098.** CD 3/1—ENR 3/3.

Mass., Brookline—Town Bldg. Comm., Town Hall, Mar. 8, north wing, high school addn., Greenough St. and Lowell Rd., from John Capobianco, 44 School St., Boston, **$788,000,** Alternate A **$889,700,** Alternate B **$1,019,700.** CD 2/14—ENR 2/24.

Mass., Canton—Town, School Dpt., Canton, Mar. 7, high school, from James S. Mozzicato, 168 Mystic Ave., Medford, **$540,400.** CD 2/14—ENR 2/24.

Mass., Wareham—Town, Supt. Schools, Wareham, Mar. 5, high school alterations, addn., from Theodore Loranger & Sons, 404 Nash Rd., New Bedford, **$747,390.** CD 2/25.

Mo., St. Joseph—State Dpt. P. Health & Welfare, Sam Marsh, dir., Jefferson City, Mar. 8, brick, concrete, stone infirmary for aged patients, State Hospital 2, from Allen Chambers, 1643 Bellview St., Kansas City, Mo., **$598,604.** CD 2/18—ENR 2/24.

†Neb., Omaha—U. S. Eng., 1709 Jackson St., Mar. 10, veterans hospital addn., for Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C., from **Rorick Constr. Co.,** 905 S. 20 St., **$344,641.** Est. $373,320. CD 2/9—ENR 2/24.

●†N. H., Manchester—U. S. Eng., Army Base, Boston, 10, Mass., Mar. 8, boiler house, garage and personnel quarters at veterans hospital, Eng. 19-016-49-69 for Veterans Admin., Vermont Ave. between H and I. Sts. N. W., Wash. 25, D. C., from Davison Constr. Co., 1306A Elm St., **$532,216*****personnel quarters, from Swanburg Constr. Corp., 61 Amherst St., **$285,700***** boiler house and garage, from Frankini Constr. Co., Inc., 26 Mystic Ave., Medford, Mass., **$273,-936.** CD 2/2—ENR 2/10.

N. M., Eunice—Lea County Common School Dist. 8, Seth Alston, pres., Lovington, Mar. 1, general contract school addns.; High School alterations, addns., vocational shop and central heating plant, from J. W. Bateson, Irwin Keasler Bldg., Dallas, Tex., **$441,061.** CD 2/10—ENR 2/17.

†N. M., Los Alamos—U. S. Atomic Energy Comn., Los Alamos, Feb. 24, Sect. 4, 5 permanent type steel, concrete block shops and yard bldgs., 2 parking sheds, chain link fencing area, in Zia Transportation Yards, from Robert E. McKee, P. O. Box 1706, Santa Fe, $760,700, est. $600,000; Sect. 2, asph. and c. conc. paving and Sect. 3, outside systems of water and storm sewers, from Loudermilk Bros., Los Alamos, $93,000 and $86,588 respectively. CD 1/24—ENR 1/27.

●†N. M., Los Alamos—U. S. Atomic Energy Comn., Los Alamos, rejected bids Jan. 18, High School, Serial No. 291-49-72, L. B. $1,080,203. CD 1/26—ENR 2/3, under LB.

●†Tenn., Nashville—Pub. Bldgs. Admin., 18 and F Sts. N. W., Wash. 25, D. C., Mar. 11, 8 story federal bldg., from Beers Constr. Co., 70 Ellis St. N. E. Atlanta, Ga., $4,594,000; installing 8 elevators, from Westinghouse Electric Co., 401 6 Ave. S. Nashville, $389,100. CD 2/7—ENR 2/10.

Tex., Panhandle—Carson Co., Panhandle, Mar. 7, 2 story, 75x108 ft., structural steel, masonry courthouse and jail, from Neil Singleton, 514 N. Fillmore St., Amarillo, $555,875. Est. $360,000. CD 2/15—ENR 2/17.

Wash., Seattle — City, County-City Bldg., Zone 4, Mar. 9, 1 story, rein.-con. engineering department shop bldg., from Frazier Constr. Co., 309 Pontius Ave., $320,581. Est. $400,000. CD 2/16—ENR 2/24.

CONTRACTS AWARDED

Tex., Dallas — Dallas Independent School Dist., Akard & Royal Sts., Leila P. Cowart School, to J. W. Bateson Constr. Co., Irwin-Keasler Bldg., $597,405. Bids 3/8. CD 2/7—ENR 2/10.

●Wash., Seattle—City, County-City Bldg., Zone 4, City Light Gorge powerhouse addn. and complete penstock tunnel, to Guy F. Atkinson Co., 10 W. Orange Ave., South San Francisco, Calif., $3,188,268. Bids 3/2, awarded 3/9. CD 3/8—ENR 3/10, under LB.

Wis., Merrill — Bd. Educ., Merrill, general contract high school, to Ben B. Ganther Co., 78 State St., Oshkosh, $555,069. Bids 2/19. CD 3/2—ENR 3/10, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

March 22

Conn., Bridgeport—Boys Club of Bridgeport, Inc., 231 Middle St., 1 story, bsmnt., 172x178 ft. brick, concrete, steel club, Madison Ave. $325,000. Fletcher Thompson, Inc., 211 State St., archt. CD 1/14—ENR 2/3.

March 28

Pa., Wilkinsburg — Westinghouse Electric Corp., 501 Pennwood Ave., Pittsburgh, 2 story, 60x150 ft. brick, tile, steel frame, steel joist, precast rein.-con. educational center, $450,000. Hoffman & Crumpton, 132 7 St., Pittsburgh, archts. CD 11/4—ENR 11/18.

March 29

●Conn., Hartford—St. Francis Hospital Corp., 140 Farmington Ave., hospital addn., $2,000,000. Louis A. Walsh, 111 Main St., Waterbury, archt. CD 11/30/44—ENR 12/14/44.

April 19

●Tex., El Paso—Providence Memorial Hospital, Dr. L. L. Evans, supt., 617 Santa Fe St., 6 story, bsmnt., 200 bed steel frame Memorial Hospital and Nurses Home, concrete pier and beam fdn. $1,000,000. Carroll & Daeuble, 1001 E. Yandell Blvd., archts. CD 1/27—ENR 2/3.

LOW BIDDERS

Colo., Ft. Morgan—Ft. Morgan Community Hospital Assn., Ft. Morgan, Mar. 8, general contract, 2 story, bsmnt., 50 bed hospital, from Newstrom-Davis & Co., 2000 W. 8 Ave., Denver, $288,437. CD 2/8—ENR 2/17.

Conn., Bridgeport—University of Bridgeport, James Halsey, pres., Mar. 9, 2 story, bsmnt., brick, steel, concrete College of Engineering, Park Pl. and Myrtle Ave., from Otto F. Burghart, Inc., 871 Central Ave., $424,986. Est. $400,000. CD 2/24—ENR 3/2.

CONTRACTS AWARDED

●Calif., Los Angeles—Compton Park Inc., 6307 Wilshire Blvd., 225 frame, stucco dwellings in Sylmar, Lullaby and Buton Lanes, Tilden and Lennox Aves., Lanark and Titus Sts. Owner builds, $1,350,000. Southern Drafting Service, 2424 W. Florence Ave., archts.

●Calif., Los Angeles — Pacific Constr. & Finance Co., 5147 Sunset Blvd., 177 frame, stucco dwellings in Van Nuys Dist. Owner builds, $1,750,000.

Conn., Derby—Southern New England Telephone Co., 227 Church St., New Haven, 2 story, bsmnt., brick, steel telephone exchange bldg. addn., Olivia St., to W. J. Megin Inc., 51 Elm St., Naugatuck, $375,670. Bids 2/10. CD 2/1—ENR 2/3.

Conn., Manchester — Greenbrooke Homes, Inc., 5 Dover Rd., forty-three, 6 room frame houses, Falkner Dr. Owner builds, $387,000.

Tex., Garland — Garland Investment Co., c/o Wilson H. Brown, 2711 Inwood Rd., Dallas, 53 residences. Owner builds. $300,000. CD 3/11.

Proposal Advertisements see pp. 351-352
Proposed Projects see p. 276

OFFICIAL PROPOSALS

(Additional Proposal Advertising on page 352, 380 & 383)

Bids: March 23, 1949 (905)

Barge Canal Improvement

NOTICE TO BIDDERS

Sealed proposals in duplicate covering construction of

Contract—Guard Gates, Spillway and per-U. S. 37 forming other miscellaneous work at Herkimer (Mohawk) Herkimer County, N. Y.

Contract—Guard Gates and performing U. S. 64 other miscellaneous work at Little Falls, Herkimer County, N. Y.

will be received by Henry A. Cohen, Director, Bureau of Contracts and Accounts, Department of Public Works, The Governor Alfred E. Smith State Office Building, Albany, N. Y., on behalf of the Department of Public Works until 10:30 o'clock A. M. (Eastern Standard Time) on Wednesday, March 23, 1949, when they will be publicly opened and read.

Each proposal must be made upon the form and submitted in the envelope provided therefor and shall be accompanied by a certified check made payable to the State of New York, Commissioner of Taxation and Finance, of 5% of the amount of the bid as a guaranty that the bidder will enter into the contract if it be awarded to him. The title of the work must be written on the front of the envelope, sealed and delivered to Henry A. Cohen, Director, Bureau of Contracts and Accounts, The Governor Alfred E. Smith State Office Building, Albany, N. Y. The blank spaces in the proposal must be filled in, and no change shall be made in the phraseology of the proposal. Proposals that carry any omissions, erasures, alterations or additions may be rejected as informal. Successful bidder will be required to give a bond conditioned for the faithful performance of the contract and a separate bond for the payment of laborers and material men. Corporations submitting proposals shall be authorized to do business in the State of New York. Drawings and specifications may be examined free of charge at the following offices:

Guy W. Pinck, Deputy Chief Engineer, The Governor Alfred E. Smith State Office Building, Albany, N. Y.
State Architect, 18th Floor, 270 Broadway, New York City.
Lacy Ketchum, District Engineer, 109 N. Genesee St., Utica (1) N. Y.
Wm. Robinson, District Engineer, 301 E. Water St., Syracuse (1) N. Y.
A. R. Mulligan, District Engineer, Barge Canal Terminal, Rochester (1) N. Y.
Charles H. Waters, District Engineer, 65 Court St., Buffalo (2) N. Y.

Drawings and specifications may be obtained from the Director, Bureau of Contracts and Accounts, The Governor Alfred E. Smith State Office Building, Albany, New York, upon deposit of $10.00 for each set.

Refund in full will be made to bidders for one set of plans and specifications returned in good condition within 30 days of award of contract or the rejection of the bids. A 50% reimbursement will be made for the return in good condition, of all other sets of the plans and specifications within 30 days following the award of the contract or the rejection of the bids.

Checks for plans and specifications shall be made payable to the State of New York.

Proposal blanks and envelopes will be furnished without charge.

B. D. TALLAMY, Superintendent
N. Y. State Department of Public Works

Bids: April 4, 1949 (P927)

Transit Shed in Block 10-B

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
CONTRACT PN-14

Sealed proposals for the construction of a Transit Shed building, exclusive of the foundations therefor, in Block 10-B at Port Newark, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2:00 o'clock on the afternoon of Monday, April 4, 1949, and thereafter in the Auditorium of the Authority at the same address until 2:45 P. M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer, and copies will be furnished upon deposit of $10.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, March 17, 1949.

Bids: April 4, 1949 (P928)

Transit Shed in Block 10-A

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
CONTRACT PN-6

Sealed proposals for the construction of a Transit Shed building, exclusive of the foundations therefor, in Block 10-A at Port Newark, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2:00 o'clock on the afternoon of Monday, April 4, 1949, and thereafter in the Auditorium of the Authority at the same address until 2:30 P. M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer, and copies will be furnished upon deposit of $10.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, March 17, 1949.

Official Proposals Columns of ENGINEERING NEWS-RECORD

are MUST reading, each week, for contractors, engineering-construction companies, equipment and materials manufacturers, all over the United States.

. . . and used regularly for over 50 years by government, state, county and municipal departments for advertising bids.

Official Proposal Division
ENGINEERING NEWS RECORD
Address: New York 18, N. Y.

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2585) will be received by Bureau of Reclamation, Old High School Building, North Warren Street, Helena, Montana, until 10 a. m., April 6, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of Canyon Ferry Dam and Power Plant, Canyon Ferry Unit, Montana, Missouri River Basin Project. The work is situated on the Missouri River about 16 miles northeast of Helena, Montana. Principal items are approximately: 359,000 cu. yds. of excavation; drilling 63,000 lin. ft. of holes for excavation, grouting, drainage and cores; 455,000 cu. yds. of concrete; installing 6,200,000 pounds of metal pipe, gates, cranes, trashracks and structural steel; furnishing and placing 4,550,000 pounds of reinforcement bars; and other work. Time allowed for completion will be 1,500 days. For particulars, address Bureau of Reclamation, Post Office Box 517, Helena, Montana; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (926)

OFFICIAL PROPOSALS
(Continued from page 351)

Bids: April 6, 1949 (908)

Sewer System and Treatment Plant

The Municipal Authority of the Borough of Lemoyne, Penna.

Sealed proposals will be received at the Borough Council Chambers, 332 Herman Ave., Lemoyne, Penna., until 2:00 P. M., E.S.T. April 6, 1949 for furnishing all necessary labor, materials and equipment, and performing all work for the construction of a Sewerage System and a Sewage Treatment Plant and appurtenances, and will there be publicly opened and read at that time. Separate proposals will be received upon two parts of the project as follows:

Sewerage System—including 58,000 lin. ft., 8" to 18" vitrified sewers; 24,000 lin. ft., 6" vitrified sewer house connections; 240 brick manholes.

Sewage Treatment Plant — including Control Building, Primary Settling Tanks, Sludge Digester, Sludge Drying Bed, Chlorine Contact Tank, fencing and specified equipment and appurtenances.

Proposals shall be accompanied by certified checks in accordance with the provisions contained in the Specifications and in the following amounts:

Sewerage System—$30,000
Sewage Treatment Plant—$7,000.

Copies of the Contract Documents, Plans and Specifications may be obtained from Gannett Fleming Corddry and Carpenter, Inc., Consulting Engineers, 600 North Second Street, Harrisburg, Penna., upon deposit of the following amounts for each set:

Sewerage System—
Twenty Dollars ($20.00)
Sewage Treatment Plant—
Fifteen Dollars ($15.00)

Full refund will be made to actual bidders for return of one set in good condition within ten days after closing date for receipt of bids; refund for return of all other sets, in good condition within the same period, will be fifty per cent of the deposit.

The Municipal Authority of the Borough of Lemoyne, Penna.
Gannett Fleming Corddry & Carpenter, Inc., Engrs.
600 North Second Street
Harrisburg, Penna.

Bids: April 27, 1949 (888)

Correction of ad appearing in 2/24/49.

Laying Cast Iron Pipe Distribution Mains and Appurtenant Work

CLARKSBURG WATER BOARD
CLARKSBURG, WEST VIRGINIA

Sealed proposals will be received for the item listed below by the Clarksburg Water Board at their office in Clarksburg, West Virginia until 10:00 A.M. on the 27th day of April, 1949, up to the hour of opening bids, at which time and place all bids will be publicly opened and read aloud. Bids will be received on the contract covering:

Laying Cast Iron Pipe Distribution Mains.

Approximate quantities:
14,000 lin. ft. of 12" pipe
6,000 lin. ft. of 8" pipe
600 cu. yds. of rock excavation

The successful bidder will be required to furnish a satisfactory performance bond in the amount of 100% of his contract. The contract documents, including specifications and drawings are on file at the office of the Clarksburg Water Board, Clarksburg, West Virginia and at the office of Alvord, Burdick & Howson, 1401 Civic Opera Bldg., Chicago, Illinois.

The right is reserved by the Water Board to reject any or all bids or to accept any considered advantage to the Water Board.

Certified check, cash, government bonds, bidder's bond, or bank draft payable to the Clarksburg Water Board, or a satisfactory bid bond executed by the bidder and a surety company in an amount equal to 10% of the bid, shall accompany the proposal.

No bid may be withdrawn after the scheduled closing time for the receipt of bids but bids may be withdrawn at any time prior to the scheduled time for opening bids.

SCOTLAND G. HIGHLAND
Secretary and General Manager
Clarksburg Water Board,
Clarksburg, West Virginia.

..... 1949.

OFFICIAL PROPOSALS

Bids: April 7, 1949 (925)

Seaside Heights Bridge

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

RT. 37. ISLAND HEIGHTS-SEASIDE HEIGHTS BRIDGE

Construction of the superstructure of the Island Heights-Seaside Heights Bridge, Contract No. 2, on Route 37, in Seaside Heights Borough and Dover Township, Ocean County. The contract consists of the construction of the superstructure for 30 beam spans 73' in length, 2 girder spans 88'-6" in length, a double leaf bascule span 101' in length, and roadway approaches. The principal items of construction are:

Estimated:
3,406 cu. yds. Concrete in Structures
670,000 lbs. Reinforcement Steel in Structures
720,000 lbs. Structural Steel in Bascule Structure
3,600,000 lbs. Structural Steel
58,000 lbs. Machinery
4,000 cu. yds. Embankment
1,870 sq. yds. Pavement, Type A or T
4,818 lin. ft. White Concrete Curb

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N. J., on Thursday, April 7, 1949 at eleven o'clock (11:00 A. M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

Bids: April 14, 1949 (924)

Fabrication and Installation of Spillway Gates and Appurtenances

Pursuant to a certain contract between Salt River Valley Water Users' Association and the City of Phoenix dated November 22, 1946, and with the permission of the United States under a separate contract between the United States, the City of Phoenix, and Salt River Valley Water Users' Association dated October 7, 1948, sealed bids for fabrication and installation of spillway gates and appurtenances at Horseshoe Dam on Verde River in Maricopa County, Arizona, will be received by Salt River Valley Water Users' Association at the office of the General Manager in the Water Users' Building at Second Avenue and Van Buren Street, Phoenix, Arizona, until 3:00 P.M., M.S.T., April 14, 1949.

Specifications covering the work to be done and other Contract Documents may be obtained from the Engineer, Leeds, Hill and Jewett at his offices, 742 Security Building, 234 North Central Avenue, Phoenix, Arizona, and 1000 Edison Building, 601 West Fifth Street, Los Angeles 13, California, upon deposit of $25.00, which amount will be refunded upon return of all documents in usable condition within ten days of the date of opening of Bids.

DESCRIPTION OF WORK

The site of the work is at Horseshoe Dam on Verde River, fifty-five miles by road northeast of Phoenix. The work to be done will be within the existing spillway channel, which is approximately 300 feet wide by 700 feet long and to and within which wheeled vehicles of any reasonable weight can be moved freely.

The following work is to be done under a separate contract prior to installation of gates in the spillway: the concrete pavement and walls in the spillway channel will be extended upstream and the six piers required for support of the spillway gates will be built, in which the gate hinge anchors will be embedded.

There will be three radial gates of the bascule type each 114 feet in length by 26 feet in height. Each gate will be supported on two piers located downstream from the gate face and be balanced and be provided with automatic and manual operating mechanisms. The gates will be fabricated of structural steel and will weigh erected about 250,000 pounds each, exclusive of concrete in the balance weights. In addition to the total of 750,000 pounds of structural steel in the gates there will be about 250,000 pounds of other metal work in hinge supports, bridges, control equipment and appurtenances.

SALT RIVER VALLEY WATER USERS' ASSOCIATION
Phoenix, Arizona

Bids: April 18, 1949 (914)

READVERTISEMENT AND CHANGE OF BID DATE

Paving and Other Construction Broome County Airport Broome County, New York

NOTICE TO BIDDERS

Binghamton, New York
March 11, 1949

1. *SEALED BIDS*, in duplicate, subject to the conditions contained herein will be received until 11:00 A.M., Eastern Standard Time, Tuesday, April 18, 1949, at the office of the Clerk of the Board of Supervisors, Broome County Office Building, Binghamton, N. Y., and then publicly opened and read, for furnishing all labor and materials and performing all work for the above-described project in accordance with the plans and specifications.

2. Copies of the plans and specifications may be obtained from the Clerk of the Board of Supervisors, Broome County Office Building, Binghamton, New York, upon payment of a charge of $15.00 for each set requested. Check and money orders should be made payable to the order of the County Treasurer, Broome County, New York.

3. Plans and specifications will be available for inspection at the offices of:
S. P. Carman
Security Mutual Building
Binghamton, New York
and
Seelye, Stevenson & Value
101 Park Avenue
New York 17, N. Y.

4. Certified check or bid bond for a sum of not less than 5% of the bid price will be required for each bid, payable to the order of the County Treasurer, Broome County.

5. Payment and performance bonds in the amount of 100% of the contract sum will be required.

6. The right is reserved, as the interest of the Owner may require, to reject any and all bids, to waive any informality in bids received, and to accept or reject any items of any bid.

7. Envelopes containing bids must be sealed and marked as follows: Bids for Paving and other Construction for Broome County Airport, to be opened at 11:00 A. M. Eastern Standard Time, April 5, 1949.

8. The right is reserved, as the interest of the Owner may require, to revise or amend the plans and/or specifications prior to the date set for opening bids. Such revisions and amendments will be announced by addenda to all prospective bidders.

HOWARD DAVIS
CLERK OF THE BOARD OF SUPERVISORS
BROOME COUNTY, NEW YORK

(Continued on page 380)

SEARCHLIGHT SECTION

CATALOG

WHERE TO BUY OR RENT used and surplus new

CONSTRUCTION EQUIPMENT MATERIALS & SUPPLIES

ALPHABETICAL INDEX OF ADVERTISERS

NAME — PAGE NO.

Aberthaw Co. 354, 356, 357, 358, 360, 361, 362, 363, 365, 370, 376
133 Southampton St., Boston 18, Mass.
Acme Road Machinery Co. 361
Frankfort, N. Y.
Acorn Bag & Burlap Co. 374
915 No. Delaware Ave., Phila. 23, Pa.
Acorn Iron & Supply Co. 356, 364, 369, 371, 373, 374, 376
915 No. Delaware Ave., Phila. 23, Pa.
Air Compressor Rental Co. 358
19615 Nottingham Rd., Cleveland 10, Ohio
Albert & Davidson Pipe Corp. 375
2nd Ave. at 50th St., Brooklyn, N. Y.
Albert Pipe Supply Co. 375
Berry & No. 13th, Brooklyn, N. Y.
American Air Compressor Corp. 365
Dell Ave. & 48th St., No. Bergen, N. J.
American Construction Co. 368
Dell Ave. & 48th St., No. Bergen, N. J.
Baggaley, Jr., R. 372
515 So. Aiken Ave., Pittsburgh 6, Pa.
Ballenger Paving Co. 368
Greenville, S. C.
Bendix Machinery Co., Inc. 365, 369
401 Broadway, New York 13, N. Y.
Benkert Steel & Supply Co. 372
2017 Preble Ave., Pittsburgh, Pa.
Beorn Equipt. Co., Gil. 364
2649 W. 95th St., Chicago 42, Ill.
Bower Mine, Inc. 368
Box 1580, Clarksburg, W. Va.
Bradford Supply Co. 357
Wayne (Wood County), Ohio
Brunson Instrument Co. 374
1405 Walnut St., Kansas City, Mo.
Buf 374
69 Dey St., New York, N. Y.
Candler & Bass, Inc. 376
Birmingham Theatre Bldg., Birm., Mich.
Casey & Emmert, Inc. 364
1424 W. Ohio St., Chicago 22, Ill.
Circle Connection Corp. 368
P. O. Box 424, White Plains, N. Y.
Cellignon Construction Co. 368
916-920 W. 1st St., Davenport, Iowa
Contractors Machinery Co. 354
2645 Southwest Blvd., Kansas City 8, Mo.
Darien Corp. 376
60 E. 42nd St., New York 17, N. Y.
Diesel Motors Corp. 371
Port Washington, L. I., N. Y.
D'Orio Contracting Co., Inc. 364
162-28 75th Rd., Flushing, N. Y.
Drachman Steel Corp., Hy. 366
563 E. Tremont Ave., New York 57, N. Y.
Dreifus Co., Charles 361
1816 Widener Bldg., Phila., Pa.
Dulien Steel Products, Inc. 376
9265 E. Marginal Way, Seattle 8, Wash.
Dunn Co., Inc., W. J. 370
524 C. St., Boston 10, Mass.
Duquesne Electric & Mfg. Co. 373
Pittsburgh 6, Pa.
Dyer Co., The W. H. 376
St. Louis 1, Mo.
Earle Equipment Co. 368
3648 Division Ave., S., Grand Rapids 8, Mich.
Economy Co., Inc. 363
49 Vanderbilt Ave., New York, N. Y.
Ehrbar, Inc., Edward 356, 360, 361
29 Messerole Ave., Brooklyn 22, N. Y.
Ellis-Novack Co. 370
1925 N. Buena Vista, Burbank, Calif.
Equipment Corp. of America 361
1150 So. Washtenaw Ave., Chicago 12, Ill.
Equipment Rental Service 368
210 St. Joseph St., Lansing 15, Mich.
Evans, Overton C. 370
Mt. Sterling, Ky.
FS 7328 366
FS 7844 374
FS 8314 376
FS 8339 373
FS 6354 372
Fabick Tractor Co., John 372
Sikeston, Mo.
Ferguson Construction Co. 366
137 Blvd. N. E., Atlanta, Ga.
Forsythe Equip. Co., Inc. 362
11 W. 42nd St., New York 18, N. Y.
Foster Co., L. B. 376
Pittsburgh, Pa.
Frank, M. K. 376
480 Lexington Ave., New York, N. Y.
Frazier-Davis Construction Co. 368
1319 Mackland Ave., St. Louis, Mo.
Furnival Machinery Co. 363
54th at Lancaster Ave., Phila., Pa.

NAME — PAGE NO.

Gilgenbach Co., C. P. 366
R. D. 1, Elyria, Ohio
Graf-Apsco 374
5868 No. Broadway, Chicago, Ill.
Great Neck Bldg. Materials Corp. 372
541 Bayview Ave., Manhasset, N. Y.
Greensburg Machine Co. 369
Greensburg, Penna.
Greenpoint Iron & Pipe Co., Inc. 375
Bogart & Stagg St., Brooklyn, N. Y.
Grey Steel Products Co. 354
74 Central Ave., Glen Rock, N. J.
Gurley, W. & L. E. 374
Union Plaza, Troy, N. Y.
Handley, William N. 373
Richmond, Mo.
Hawkins & Co. 358
154 Se. Michigan Ave., Chicago, Ill.
Hebenstreit, Julius 366
56-15 58th St., Maspeth, L. I., N. Y.
Hercules Electric Machinery & Equip. Co. 357
1412-18 S. Alameda St., Compton, Calif.
Hickerson, Ray D. 374
46 Johnson Ave., Indianapolis, Ind.
Hodge & Hammond, Inc. 366, 369
1162 Grinnell Place, New York 59, N. Y.
Horwitz Pipe & Steel Co. 375
P. O. Box 2534, Tulsa, Okla.
Hunter Tractor & Machinery Co. 368
327 So. 16th St., Milwaukee 3, Wisc.
Ingersoll Co., The Chas. M. 362
19930 Detroit Rd., Rocky River, Ohio
Instrument Sales 374
325 W. Huron St., Chicago 10, Ill.
International Hoist & Machine Co. 356
556 Ferry St., Newark 5, N. J.
Iron & Steel Products, Inc. 357, 360
13494 S. Brainard Ave., Chicago 33, Ill.
Juliette Coal Co. 368
Grand Bldg., Pittsburgh, Pa.
Jutton-Kelly Co. 372
13240 Alber Ave., Dearborn, Mich.
Kessler, C. 370
1515 Lincoln Ave., Prospect Park, Pa.
Kenn Equipment Co., Inc. 368
205 Van Brunt St., Brooklyn, N. Y.
Kero, Michael 371
6'1 Schuyler Ave., Lyndhurst, N. Y.
Kilmain Sales Co., Inc., T. J. 366
90 N. Mt. Vernon Ave., Union town, Pa.
Landi, T. 370
Spring St., Morristown, N. J.
Lawrence, C. 376
Kitty Hawk, N. C.
Lee & Son, William W. 374
20 E. Jackson Blvd., Chicago 4, Ill.
Lee Crane Service, Inc. 374
33 Island St., Boston 19, Mass.
Lorenz Equipment Co. 358
1547 W. Rich St., Columbus 8, Ohio
Luff, R. M. 376
c/o City Waterworks Plant
Douglasdale Rd., Richmond, Va.
McClung-Logan Equip. Co. 366
Key Hwy & McComas St., Balto 30, Md.
MacNeal, Donald B. 354, 370, 375
12100 Se. Loomis St., Chicago, Ill.
Mahoney-Clarke, Inc. 365
217 Pearl St., New York 7, N. Y.
Mertes Machinery Co. 362
1622 So. First St., Milwaukee 4, Wisc.
Metzger 364
1040 N. Grand Blvd., St. Louis 6, Mo.
Miles & Testa Co. 360
Jung Hotel, New Orleans, La.
Miller, Luke Machinery Sales 376
335 Southwest Blvd., Kansas City 8, Mo.
Mississippi Valley Equip. Co. 354, 376
511 Locust St., St. Louis, Mo.
Morrison Railway Supply Corp. 376
Rand Bldg., Buffalo 3, N. Y.
Moto-Crane Service, Inc. 360
53 W. 7 Mile Rd., Detroit 3, Mich.
Mulligan Coal Co., Inc. 364
Greenville, Ky.
Murphy, Inc., J. L. 369
Fresh Meadows Housing Project
Flushing, L. I., N. Y.
National Blue Print Co. 374
210 So. Canal St., Chicago, Ill.
Nedcar Excavating Co. 366
15 William St., New York 5, N. Y.
O'Dell & Riney Construction Co. 366
Box 3775, Kirkwood 22, Mo.
O'Neil, A. J. 361
Lansdowne Theatre Bldg., Lansdowne, Pa.
Parkinson & Son, R. A. 360
510 N. Delaware Ave., Phila. 23, Pa.

NAME — PAGE NO.

Pittsburgh Plate Glass Co. 370
Barberton, Ohio
Queensboro Steel Corp. 361
47-29 Van Dam St., L. I. C. 1, N. Y.
Reid Holcomb Co., Inc. 374
1815 Kentucky Ave., Indianapolis 21, Ind.
Rental Service Co. 350
4605 N. 4th St., Phila. 40, Pa.
Reyen Enterprises, Inc. 371
San Luis, Corner General Luna,
Manila, Philippines
Rice, Inc., Harland G. 376
Edgewater, N. J.
Rose Brothers Co. 367
1400 Harrison Ave., Cinn. 14, Ohio
Schmidt Bros. 376
2493 Johnstown Rd., Columbus, Ohio
Schoonmaker Co., Inc., A. G. 357
50 Church St., New York, N. Y.
Scott, Inc., J. Thomas 368
784 So. Front St., Phila. 47, Pa.
Serading, Inc., V. 362
7 W. N. Bend Rd., Cinn. 16, Ohio
Service Supply Corp. 363
20th & Erie Ave., Phila. 32, Pa.
Shannahan, Inc., John J. 356, 364
17 Electric Ave., Brighton, Mass.
Shannon & Co., J. Jacob 356, 370
214 N. 22nd St., Phila. 3, Pa.
Sherman Transfer Co., The Roger 362
East Hartford, Conn.
Smith Co., H. V. 357
828 N. Broadway, Milwaukee 2, Wisc.
Smith, Inc., L. B. 354, 355, 368
Camp Hill, Pa.
Stanhope, Inc., R. C. 354
60 E. 42nd St., New York, N. Y.
Stone the Crane Man 354
413 Brainard Ave., Detroit 1, Mich.
Tasco, Inc. 375
111 Front St., Hempstead, N. Y.
Thompson Co., Inc., J. Parker 370, 371, 373
507 5th Ave., New York, N. Y.
Tractor & Equipment Co. 358
3515 W. 51st., St., Chicago 32, Ill.
Tuckahoe Construction Co., Inc. 366
116 Columbus Ave., Tuckahoe 7, N. Y.
Venice, Charles L. 373
P. O. Box 5027 Aces, Canal Zone
Villro Equipment Co. 361
233 North Ave., Westfield, N. Y.
Vulcan Iron Works 364
327 N. Bell Ave., Chicago, Ill.
Wallace Corp., B. F. 358
Schuylkill Trust Bldg., Pottsville, Pa.
Walsh Co., Richard P. 354
30 Church St., New York, N. Y.
Walsh, Dick 370
1616 W. Cermak Rd., Chicago 8, Ill.
Walsh Equip. Co., W. T. 360
12750 Berea Rd., Cleveland, Ohio
Walsh, J. T. 354
506 Brisbane Bldg., Buffalo 3, N. Y.
Warren-Knight Co. 374
136 N. 12th St., Phila. 7, Pa.
Weaver, Charles 369
41st Floor, Penobscot, Mass.
Weil & Co., J. H. 374
1315 Cherry St., Phila., Pa.
Weiss, B. M. 356, 365
Grand Trust Co. Bldg., Phila. 2, Pa.
Whayne Co., Roy C. 365
800 W. Main St., Louisville 2, Ky.
White Co., David 374
Milwaukee 12, Wisc.
Wigglesworth Machinery Co. 376
199 Bent St., Cambridge, Mass.
Williams Construction Co. 362, 371
Box 145, Middle River, Balto. 20, Md.
Wilms & Co., Walter H. 370
25-26 Guardian Bldg., Detroit 26, Mich.
Zlobro, Inc., Stanley J. 372
39 Lackawanna Plaza, Bloomfield, N. J.

EQUIPMENT WANTED ADVERTISERS

Acorn Iron & Supply Co. 372
915 No. Delaware Ave., Phila. 23, Pa.
Bauer, L. W. 372
22 Barnett St., Bloomfield, N. J.
East Coast Valve & Fitting Co., Inc. 372
725 Fifth Ave., Brooklyn 32, N. Y.
Peerless Construction Co. 372
280 Madison Ave., New York 16, N. Y.
Sheridan Equipment Co., Ltd. 372
33 Laird Dr., N., Toronto 17, Ont., Can.
Stone the Crane Man 372
415 Brainard Ave., Detroit 1, Mich.
W8222 372
W8313 372

SEARCHLIGHT SECTION

SHOVELS, CRANES, DRAGLINES

Buc-Erie 120B, 5 yd. Elec. Shovel.
Buc-Erie 120B, 5 yd. Steam Shovel.
Buc-Erie 22B Dragline. Diesel.
P&H 1225 2½ yd. Electric Shovel.
Northwest 80 2½ yd. Shovel-Dragline.
Lorain 82D Diesel crane, 40 tons. 1943.
Lima 1201 Diesel Drag. 3½ yds.
P & H 705 diesel dragline.
P&H 655B 2 yd. Diesel Shovel.
Link-Belt K-580 2¼ yd. Shovel-Drag.
Link-Belt K 375 Crane-Dragline, Diesel.
Manitowoc 2,000 beam 1½ bed. diesel dragline.
Lorain dragline 78 diesel 75' boom.
Marion 37 Electric Shovel 1¾ yds.
Marion 90 steam crane-pile driver.
Lorain 40, 15 ton Truck Crane.
Lorain MC4 moto crane. 1943. Excellent.

ROAD CONTRACTORS EQUIP.

Finisher Koehring Long. 20'—24'.
Finisher Blaw-Knox 10'—12'
Port. 500 CFM Diesel Air Compressor.
Rooter 5¾ ton LaPlant-Choate.
Blaw-Knox Concrete Spreader, 20'x24'.
Cat. 12 road grader 9K series.
Rooter LaPlante Choate 3 line RP.
Road Forms 5000 ft. 9"x9". Other sizes.
Cat. No. 11, Motor Patrol Grader.
Cat. No. 112 motor patrol. Excellent condition.

ASPHALT PLANTS

B-G Bit. Concrete Model 848 Mixing.
Cedar Rapids "Speedline".
Cedar Rapids Portable 20 Ton per hr.
Cedar Rapids 4000# Model E Portable.

Complete Plant Liquidation - Spot Delivery

SHOVEL:

Bucyrus-Erie Model 84B 2½ yd. Diesel Shovel.
Koehring Model 304 ¾ yd. Shovel, Diesel powered. New 1946.

CRANE:

Bucyrus-Erie Model 15B crane, new 1943, in rebuilt condition.

TRACTORS:

Caterpillar D8, 2U series, about one year old, with D.D.P.C.U. and angledozer blade.
Caterpillar D8, 8R series, D.D.P.C.U. and angledozer blade.
International TD18, with LeTourneau double drum unit. New in late 1946.
Allis-Chalmers HD14C, equipped with D.D.P.C.U. and pusher block. New July, 1947.
Allis-Chalmers HD-19H with angledozer blade. New July 1948.
Int. TD18 with Heil angledozer Trail Builder with D.D.P.C.U. New Nov. 1947.

GRADERS:

Warco Motor Grader, new September 1947.
Adams Motor Grader, new September 1947.
Austin-Weston 99H New Nov. 1948. **Int.-UD14** Diesel Engine.

EUCLID REAR DUMP TRUCKS:

Model 31FD New January 1946. **Model 27FD** New April 1946.
Model 27FD New April 1946. **Model 27FD** New November 1946.
NOTE: Must be sold as ONE UNIT.

TOURNAPULLS:

4 LeTourneau Super C Tournapulls with LaPlant-Choate scrapers.
3 LeTourneau 10 yd. Rock Wagons.

AIR COMPRESSORS:

2 Ingersoll-Rand 315 cu. ft. compressors, gas operated, new June 1948.

WAGON DRILLS:

2 Ingersoll-Rand Model 3M2 Wagon Drills. New June 1946.

READY MIX CONCRETE PLANTS

B-K 105 tons Ag. bin, 200 bbls. Cement Bin. Complete with Weighbatchers.
Butler complete ready-mix concrete plant 105 ton Agg. Bin 300 bbl. bulk cement bin.
Johnson complete ready-mix concrete plant 120 ton Agg. Bin 350 bbl. bulk cement bin.
Johnson 500 yd. Batcher plant; 3 compts. aggregate one for 300 bbl. cement. Excellent condition.
Butler Plant 300 T.aggr. 400 bbls. cement
Butler 300 ton 3 comp. bin has 1 compt. for 400 bbls. cement, complete with weighbatcher, bucket elevator, etc.
Blaw-Knox 3 compt. 100 ton agg. Bin.

TRANSIT MIXERS, PAVERS, ETC.

Adnun Black Top Paver 10'-12'.
Pumpcretes, 160-180-190-200.
Ransome stationary Concrete Mixer 84S.
Multifoot 27-E, paver, rebuilt.
Rex 34E Dual Drum Paver.
Koehring 2S-S Mixer. Gas Operated.
Rex 34E dual drum Paver. Like new.
Rex 27E Paver. Good condition.

DERRICKS—STEEL & STIFF-LEG

Derrick & Hoist 75 tons stiff-leg.
American Terry stiff-leg 50 tons 90' bm.
American Terry, stiff-leg 10 tons, 75' bm.
Ketler 25 ton Guy, 100 ft. mast 90' bm.
Insley Guy 20 tons, 115' mast, 90' bm.
Wiley 50 ton Steel Stiff-leg, 60' boom.
Steel Guy 25 tons 110' mast, 100' bm.
Steel Guy, 35 tons, 125' mast, 115' bm.
Steel Stiff-leg 25 ton, 3 drum Elec. hoist.

30 CHURCH STREET Cable "RICHWALSH" New York **RICHARD P. WALSH CO.** Telephones: Cortlandt 7-0723 7-0724 **NEW YORK, N. Y.**

AIR COMPRESSORS

110-315, 420, 603, 1,000 Ft. I-R Diesels
110, 160, 220, 310 & 1,000 Gas Portable
2—676', 870', & 1350 Ingersoll Rand XCB Bltd 1302, 1578, 2200, 3176 & 5000' Elec.
Low Pres: 743, 1200, 1580, 2600 & 5800 ft.

CRANES—DRAGLINES

1 Yd. P. & H. 600 50' Boom Crane
8—45 Ton & 25 Ton Cap. 100 Ft. Boom Whirleys with or without Gantrys. Steam Elec. Diesel
16 Yds. 100 Ft. Boom Elec. Dragline
1¼ Yd. 42B Bucyrus Steam 50 ft. Boom Crane & Shovel
1½ Yd. P. & H. Model 700B Dragline & Shovel
1—7 Yd. Cap. Marion Diesel Dragline
1—6 Yd. Cap. B.E. Monighan Diesel Dragline

DUMP CARS

136 TUNNEL CARS ½ Yd., 2 Yd. & 4 Yd. Cap.
40—12 Yd., 20 Yd. & 30 Yd. St. Ga. Air Dump

HOISTING ENGINES

STEAM: 14x12, 9x10, 8½x10, & 7x10
ELECTRIC: 30, 40, 60, 80, 100, 125 & 150 H.P.
GAS & DIESEL: 15, 40, 75, 90, 110 & 140 H.P.

LOCOMOTIVE CRANES

25 Ton American Steam & 3—20 Ton Ohio
35 Ton Industrial Brownhoist, Diesel
50 Ton Industrial Brownhoist, Steam

LOCOMOTIVES

33—Steam—40, 60, 110 & 220 ton
14—Diesel—15, 25, 45, 65, & 80 ton
44—Gasoline—4, 6, 8, 12, 16, 25 & 35 ton

PILE HAMMERS & EXTRACTORS

9—McKiernan-Terry No. 1, 2, 5, 6, 7, 9S3, 10S3
Vulcan 80C Extractor & Vulcan #2 & 1 Hammers
5 VULCAN 50c & 80c Hammers

PUMPCRETE

Model 160, 190 & 180 & 200 REX Pumpcretes

R R CARS

140—Flat Cars 30-40, 50 ton
20—Gondolas 40 & 50 ton
60—40 Ton Cap. Box Cars
126—8000 & 10000 gal Tank Cars

SHOVELS

1¼ Yd. 41B Bucyrus Steam
1—17 Yd. Cap. Bucyrus Erie Elec. Shovel
2—10 Yd. Cap Marion Elec. Shovels
1—8 Yd. Cap. Marion Elec. Shovel
1—5 Yd. Cap. Marion Elec. Shovel
1—4 Yd. Cap. Marion Diesel Shovel
5 STEAM SHOVELS—3½, 5, 6 & 8 YD.
2—4 Yd. Marion Elec.

STEEL DERRICKS

5 Ton Steel Stiff Leg 40 Ft. Boom
2—Clyde 15 Ton Stiff Leg 100 & 125' Boom
2—Terry 25 Ton 100' Boom Guy Steel Erectors
3—7-10 Ton Guy 85' & 50 Ton 100'

STORAGE TANKS

14—5,000, 35,000 & 80,000 bbl. cap.
17—8000-15000 & 25000 & 42000 gal. cap.

TUNNEL EQUIPMENT

CONWAY Muckers 20A, 30A, 50A, 60A & 75

R. C. STANHOPE, INC.

40 E. 42 St. NEW YORK, N. Y.
Telephone: MUrray Hill 2-3076

GMC • STUDEBAKER • REO
OWNERS

- **New double strength trunnion shafts with brackets and bushings.**
- **New rear axle drive shafts.**
- **New and slightly used six cylinder engines.**
- **Also many other parts for same.**

CONSTRUCTION EQUIPMENT & TRUCKS

L. B. SMITH, INC.

Harrisburg 7331 **Camp Hill, Pa.**

TRUCK CRANES

LATEST OF LATE MODELS

1—Northwest 100 Ft. Boom—25 Ft. Jib—Serial 10910

2—T120 Brownings—100 Ft. Booms—25 Ft. Jibs—Serial No. 3838 and 3854

2—T-15 Brownings—70 Ft. Booms—15 Ft. Jibs—Serial No. 3075 and 3605

Located Chicago, equipped steel erection purposes

DONALD B. MAC NEAL, INC.

12100 S. Loomis St. *Pullman 5-3411* Chicago 43, Ill.

⅜ yd. Byers Bearcat Jr. crane
1¼ yd. No. West comb. pullshovel-crane
50 ton Baldwin loco. oil fired, ST.
160# Vt. boiler 54" x 8' 5" Nat. Bd.
25 ton Browning loco. crane 50' boom

J. T. WALSH

508 Brisbane Bldg. Buffalo 3, New York

FOR SALE

1—Lorain TL-20 Gas Crawler Backhoe, 30" Bucket, new Aug. 1948.
1—Link-Belt 40-ton cap. K-55 Gas Crawler Crane, 90' bm., rebuilt.
1—Lorain MC-414 Moto-Crane 1948.

GREY STEEL PRODUCTS CO.

74 Central Ave., Glen Rock, N. J.
Tel. Ridgewood 6-2275

FOR SALE

15 ton Orion steam locomotive crane new 1942. 8 wheel. 60 ft. bm. Like new.

50 ton Whitcomb diesel elec. switching locomotive. Cummins engines. New 1942. Excellent.

1¾ Lima 701 crane-shovel-dragline. Superior diesel. Overhauled. 60 ft. bm. Barge...

2½ yd. Northwest 30D diesel shovel. Murphy engine. New 1941. Low price.

MISSISSIPPI VALLEY EQUIPMENT CO.

509 Locust St. St. Louis 1, Mo.

Pile Driving Equipment

Vulcan and McKiernan-Terry Steam Pile Hammers and Extractors
Pile Driving Accessories
Drop Pile Hammers and Caps
Steel Sheet Piling

CONTRACTORS MACHINERY COMPANY

2637 Southwest Blvd. Phone Valentine 4748 **Kansas City 8, Mo.**

FOR SALE

1½ yd. P & H. Dragline & Backhoe, year old.
2½ yd.. Koehring dragline
¾ yd., Koehring dragline
1½ yd. Bucyrus Erie dragline
2 yd.. Link Belt dragline
3 yd., dragline bucket
Locomotives, gas & diesel
70 yd. Johnson 3 comp. bin with scales
½ yd. Bay City, comb. crane, shovel, dragline

"STONE THE CRANE MAN"

415 Brainard Ave. Detroit 1, Mich.

FOR SALE

Model 180 Single Pumpcrete
1000' of pipe and fittings
For Quick Sale—$5500.00

ABERTHAW COMPANY

133 Southampton St. Boston 18, Mass.
Phone Highlands 5-6700

L.B.SMITH INC. OFFERS

AIR COMPRESSORS

Worthington two-stage, water cooled, vertical 250#, 60 CFM, new condition.
Gardner-Denver, 105 foot, with air receiver, hose reel, driven by power take-off and mounted 1941 Ford.
Gardner-Denver air-cooled 105 foot with receiver, V-Belt driven from power take-off and mounted on 1942 Ford chassis with Wood two-yard dump body.
Gardner-Denver two-stage 160 ft., skid mounted.
Worthington 210 cubic foot, two-stage air-cooled, on steel wheels with Hercules diesel.
Chicago Pneumatic 210 cubic foot, two-stage, air-cooled, Caterpillar diesel on four rubber tired wheels.
Gardner-Denver 315 cu. ft. two-stage, skid mounted, Murphy four-cylinder diesel.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven, 50 HP slip ring motor.

QUARRY EQUIPMENT & BINS

New 16 x 16 double clamshell gates.
Practically new Jeffrey type VS, 28'6" centers, bucket elevator, 6x4 buckets, belt mounted, fully enclosed, can extend to 80'.
Link-Belt style 146 vertical centrifugal discharge bucket elevator, belt type, fully enclosed, extendable to 65'.
18 x 36 Farrell deep jaw crusher, with McLanahan 3' x 7' roll type feeder.
10 x 20 Champion No. 4½ primary jaw crusher
10 x 7 Allis Chalmers Blake type jaw crusher.
Williams 20-S pulverizer.
36x36 Jeffrey Flextooth pulverizer.
100 ton 3 compartment storage or aggregate bin with or without batcher and scales.
60 ton 2 compartment storage bin with clam shell gates.

ELECTRIC MOTORS

New & Rebuilt—All Sizes
3 to 125 HP in stock
Open and Totally Enclosed

TRUCKS—TRAILERS

1½-ton Ford & Chevrolet.
2½-ton GMC. New and rebuilt.
Van Trailers with 17'x7'8"x6' bodies. Five ton capacity.
2,000 gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.

DIESEL GENERATORS

7½ KW to 125 KW. Alternating and direct current.

SHOVEL

Osgood 1¾-yd diesel powered shovel with 23' boom, 17' dipper stick, 1¾-yd dipper D13000 diesel engine. Excellent condition.

GASOLINE AND DIESEL ENGINES

New JXD Hercules Gasoline.
Buda, Hercules, Hill diesels, rebuilt.
New Murphy 4 and 6 cylinder diesels.
GM 6 and 12 cylinder diesels, practically new.
New Cummins 6 cylinder diesels for Euclids.

SHOVEL ATTACHMENTS

Lorain 30A chain crowd. LBS#5142, 16' boom 13'4" stick ½-yd dipper.
Lorain 40 Hi-Lift, 25' boom 19'8" stick LBS#5877, new ¾-yd dipper LBS#7750.
P&H 203A, LBS#2527, 19'6" boom 13' stick ⅝-yd dipper.
Bucyrus-Erie 30B tunnel front 9' stick 1½-yd dipper LBS#3392.
Koehring 502 with necessary parts to convert from crane to shovel, 21' boom 16' stick 1¼-yd dipper.

DRAGLINE FAIRLEADS

New Osgood ½-yd Model 200.

BACKHOE BUCKETS

¾-yd Lorain, 40, LBS#6105, 44" cutting width, teeth, sheave.
27" outside width drop bottom type LBS #1033, good condition.
26" outside width solid bottom type LBS #4377, good condition.

NEW TAGLINES

McCaffrey Model 648 for 1¼ to 2-yd crane.
McCaffrey Model 638 for ¾-yd to 1-yd crane.

SHOVEL DIPPERS

Lorain 27, ¾-yd. LBS#4912.
Bucyrus-Erie 20B, ¾-yd. LBS#3901.
Lorain 41, ¾-yd, LBS#7433, new condition.
New Lima 1-yd, Amsco, LBS#2295.
Bucyrus-Erie 1¼-yd gas air, LBS#3782, fair.
Lorain 75 manganese 1¼-yd. LBS#7233, teeth & bail.
Lorain 75B, 1¼-yd. extended lip, 1¾-yd. LBS#2280.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS#5361.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS#6153.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS#5763.

CONCRETE ROAD BUILDING & MISCELLANEOUS CONCRETE HANDLING EQUIPMENT

Pavers & Mixers

Ransome 34E dual drum, new October, 1943, with 36'8" boom, 1000 gallon auxiliary water tank, Cummins engine, rebuilt.
Jaeger Model 14DL, non-tilt mixer, rebuilt.

Concrete Finishers

Jaeger type "L" double screed, 10½'-12½' rebuilt.
Heltzel 10'-12' finisher, rebuilt.
Blaw-Knox gas-electric 10½'-12½', rebuilt.
2 Koehring 10'-12', rebuilt.
Koehring 10'-16' finisher, rebuilt.

Concrete Spreaders

Blaw-Knox type SA 10'-15' spreader new 1943. New condition.

Concrete Road Forms

830'—Truscon 7"x8" forms, with stakes.
1380'—Heltzel 7"x8" forms, with stakes.
1300'—Blaw-Knox 8"x8" forms, with stakes.
445'—Heltzel 9"x8" forms, with stakes.
1430'—Heltzel 10"x8" forms, with stakes.
1010'—Blaw-Knox 10"x8" forms, with stakes.

Fine Grade Machines

Flynn surgrader 10'-12', rebuilt.
R.B. Fine Grader for 21' width, rebuilt.

Form Graders—2 of each

Cleveland formgrader, new condition.
Carr formgrader, new 1944, rebuilt.

BELT CONVEYORS

New 18"—24"—30"—36"
- "Sealed-for-life" idlers
- Lattice or channel frame
- Shipment from stock depending on length

CLAM—DRAG—SCRAPER BUCKETS

GRADERS

Caterpillar 44 hydraulically operated drawn grader, 12' blade, wt. 8,300 lbs.
York Corporation Model SR drawn grader with scarifier, 8' blade, rakes, pneumatics, wt. 7,900 lbs.

DIESEL POWERED TRACTOR

"FD" Cletrac with Buckeye blade and double drum P.C.U.

Phone HARRISBURG, PA. 5-7331

LASTING • BONAFIDE • SERVICE
L.B. SMITH, INC.

L.B.SMITH INC. CAMP HILL, PA.
SUBURB OF HARRISBURG

WE OWN THE EQUIPMENT WE ADVERTISE

WHY IT PAYS TO BUY "INTERNATIONAL RE-ENGINEERED" GUARANTEED

HOISTS

3—LAMBERT 8½" x 10" Double Drum Steam Hoists—LIKE NEW—with or without boilers
1—LAMBERT 13" x 16" Coal Hoist with Side by Side Drums
1—LAMBERT 9" x 10" Double Drum Steam Hoist—Boiler Type
1—LAMBERT 10½" x 12" Three Drum Steam Bucket Hoist with Removable Drum Laggings & Heavy Duty Extended Shaft Arrangement with Four Winchheads
1—AMERICAN 3 Drum Contractors Hoist with 135HP Hercules Gasoline Engine

PILE HAMMER

McKIERNAN TERRY Model S-3, Bought 1948, Used On One Job

DERRICK

AMERICAN All Steel Stiffleg with 90' Boom, 3 Line, Capacity 20 tons at 58'; 13 tons at 88'

NEW HOISTS

3—30HP CHRISTIAN, 2 Drum Gasoline Hoist with Swinger
3—35HP JAEGER, 2 Drum Gasoline Derrick Hoist with Swinger
15—60HP LIDGERWOOD Single Drum Gasoline Contractors Hoist with Waukesha Engine Capacity 6000 lbs. @ 235 f.p.m.
1—80HP AMERICAN, 2 Drum Diesel Derrick Hoist with Swinger
1—125HP CHRISTIAN, 2 Drum Derrick Hoist with Swinger Swinger
2—138 HP CLYDE, 3 Drum Derrick Hoist with Swinger
2—8¼ x 10 CLYDE, 3 Drum Steam Derrick Hoist with Swinger, with or without 150# ASME Boiler

COMPRESSORS—PNEUMATIC TOOLS

NEW AND REBUILT SCHRAMM AIR COMPRESSORS. Portable and Stationary. All Sizes from 20 Cu Ft to 420 Cu Ft Actual
NEW AND REBUILT Paving Breakers, Rock Drills, Clay Diggers, Tampers, Chipping Hammers

RENTALS—REPAIR ERVICE

All kinds of equipment rented—Compressors; pneumatic tools. Tubular Steel Towers complete with hoists, elevators, buckets hoppers; Concrete Mixers; Pumps; Steel Erectors; Hoists. Our facilities are available for repairing and rebuilding your construction equipment. Inspection of our plant is invited. Estimates given and all work guaranteed.

Immediate Shipment

1. We handle only modern worthwhile equipment that can be put into good condition for long service under GUARANTEE.
2. Our plant is fitted with the most modern machine tools and other accessories for a complete rebuilding job.
3. Dismantling, inspection and repairs are thoroughly carried out by skilled workmen under practical Engineering supervision.
4. Every rebuilt machine is thoroughly tested in the plant under closest inspection before shipment, to make sure that it will serve dependably.
5. Every INTERNATIONAL "RE-ENGINEERED" machine is GUARANTEED to give complete satisfaction. Experienced contractors know what this means, coming from "INTERNATIONAL."

RENTAL SALE

INTERNATIONAL HOIST & MACHINE COMPANY

Phone: MITCHELL 2-4273

DEPENDABLE SERVICE

OFFICE: 556 FERRY ST. NEWARK, N. J. PLANT: 61-67 ESTHER ST.

SHANNON'S SPECIALS FOR ALL CONSTRUCTION JOBS

BRAND NEW U. S. NAVY GRAY

WATERPROOF OILSKIN RAIN COAT

LIGHT WEIGHT WEAR RESISTANT

Made to U. S. Navy specifications, of special treated cloth, has reinforced double stitched seams, adj. cuffs, fly front, deep flap pockets and corduroy collar. Keeps your men on the job. Medium & large sizes.

REGULAR $8.00 VALUE — $3.25 EA.

12 COATS for $36.00

Ship. Charges prepaid

BRAND NEW U. S. NAVY GRAY LIGHT WEIGHT—HIGH BIB WATERPROOF

OVER-ALLS

Made to Navy specifications. Can be worn over outer clothing. Has adj. suspenders. Medium & large sizes.

REGULAR $4.50 VALUE — $2.25

12 OVER-ALLS, $25.00

Ship. Charges Prepaid

BRAND NEW U. S. NAVY GRAY LIGHT WEIGHT OILSKIN WATER PROOF

RAIN JACKET

Has fly front, corduroy collar. Made to Navy specifications. Medium & large sizes.

$5.00 VALUE — $2.25 — 12 JACKETS $25.00

Ship. Charges Prepaid

COMBINATION OFFER

Water proof Over-Alls and Rain Jacket

BOTH FOR $4.25 — 12-2 piece suits . . $48.00

Ship. Charges Prepaid

U. S. NAVY GRAY WATERPROOF SOU'WESTER

Oil Skin Hat 65c Ea — $2.00 VALUE

12 HATS FOR $7.00

Ship. Charges Prepaid

TAMPERS • DIGGERS • DRIVERS

1⅛" x 6" Shank, fits std. hammers. Each tool brand new and guaranteed. The government buys only the best. Replace your old tools at a fraction of their regular price. These tools are army surplus.

REG. $14.50 — **TAMPERS** 8" x 8" With Stem — $6.00

REG. $9.30 — **CLAY SPADE** 5½" x 8½" — $3.75

REG. $18.00 — **SHEATHING DRIVER** — $6.00

ALL TOOLS F.O.B. PHILA.

U.S.M.C. NEW SURGICAL STEEL

UTILITY KNIFE

1½" razor sharp blade—better than light axe. Carries flat.

$12.00 VALUE — $1.50 COMP. with SCABBARD

SHP. CHG. 50c EXT. EA.

WILL SHIP RATED FIRMS. OPEN ACCOUNT FOB PHILA. OTHERS PLEASE SEND CHECK

J. JACOB SHANNON & CO.

214 N. 22nd St. Phila. 3, Pa.

THE OLDEST EQUIP. HOUSE IN PHILA.

DIESEL LOCOMOTIVE CRANES

FOR SALE or RENT

1—25-ton AMERICAN. New 1942.
1—30-ton OHIO. New 1946.
1—40-ton ORTON. New 1941.

B. M. WEISS COMPANY
Girard Trust Co. Bldg.
Phila. 2, Pa.
Rittenhouse 6-2311

SELF PRIMING CENTRIFUGAL PUMPS

Gasoline Engine Driven
Jaeger and Rex
6" 8" 10"
Thoroughly reconditioned
EDWARD EHRBAR, INC.
29 Meserole Ave. Brooklyn 22, New York
Evergreen 9-5570

BRIDGE FOR SALE 80 ft. Pratt Truss Type

ACORN IRON & SUPPLY CO.
915 No. Delaware Ave., Philadelphia 23, Pa.
Phone: WAlnut 2-7070

FOR SALE New Wire Rope Blocks

18" Single 20 Ton with S. Shackle $25.00
18" 3-Sheave 30 Ton with Shackle 50.00
18" 4-Sheave 30 Ton with Shackle 75.00
±32 Drop Forge Hooks, New 2.00

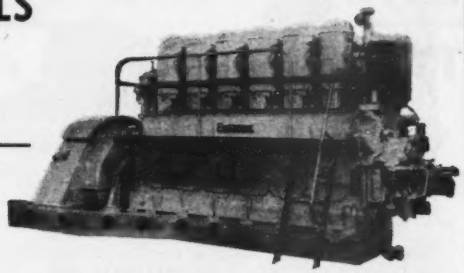
ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.

NEW ENTERPRISE DIESELS

WITH 300 KW IDEAL A.C. GENERATORS

FOR

IMMEDIATE DELIVERY



OTHER DIESELS AVAILABLE
UNIT CAPACITIES—10 TO 1420 KVA
A.C.—50 AND 60 CYCLES

A PARTIAL LIST OF OUR INVENTORY

KVA	Make	Model	HP	RPM	KVA	Make	Model	HP	RPM
1420	Fairbanks Morse	38D8⅛	1600	720	312	General Motors	8-268A	450	1200
1250	General Motors	16-278A	1600	720	300	Fairbanks Morse	YVA	360	257
900	General Motors	12-567	1080	720	200	Buckeye	80	240	600
625	Superior	OS	750	327	125	General Motors	3-268A	150	1200
425	Baldwin	VO-6	510	450	75	General Motors	6016-E	90	1200
375	Enterprise	DSG-6	450	450	62	Int'l Harvester	UD-18	76	1200

WRITE FOR COMPLETE INFORMATION

Engineered AGSCO DIESEL POWER

A. G. SCHOONMAKER Company, Inc.

ESTABLISHED 1898

Diesel Engines • Power Machinery

DIESEL DIVISION, 50 CHURCH STREET, NEW YORK 7, N. Y.

FOR SALE

Narrow Gauge Equipment

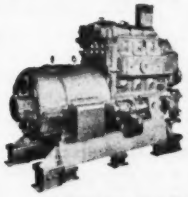
36" Gauge

1—20 ton Davenport Locomotive steam-operated, 165# W. P. A.S.M.E. boiler
3—12 ton Whitcomb Locomotives, gas
46—4 yd. Koppel Quarry Cars
14—5 yd. Koppel Dump Cars

24" Gauge

1—4 ton Plymouth Locomotive, gas
1—5 ton Whitcomb Locomotive, gas Type 3-SP
30—1 cu. yd. all steel Koppel Cars

IRON & STEEL PRODUCTS, INC.
Founded 1930
13494 S. Brainard Ave., Chicago 33, Ill.
"ANYTHING containing IRON or STEEL"



DIESEL GENERATOR PLANTS

FOR

IMMEDIATE DELIVERY

HEMCO

1000 KW, 2400 Volts, 3 Phase, 60 Cycle, 720 RPM, General Motors Model 16-278A
750 KW, 2400 Volts, 3 Phase, 60 Cycle, 720 RPM, General Motors Model 12-567
600 KW, 2400 Volts, 3 Phase, 50 Cycle, 600 RPM, General Motors Model 12-567
300 KW, 450/2400 Volts, 3 Phase, 60 Cycle, 1200 RPM, General Motors Model 8-268A
200 KW, 450/2400 Volts, 3 Phase, 60 Cycle, 1200 RPM, General Motors Model 8-268A
50 KW, 440 Volts, 3 Phase, 60 Cycle, 900 RPM, Fairbanks-Morse Model 36A 5½
100 KW, 3 Wire, 125/250 Volts, DC, 1200 RPM, General Motors Model 3-268A
900 HP, General Motors Model 12-567, Propulsion Unit Complete

HERCULES ELECTRIC MACHINERY and EQUIPMENT CO.

Telephone NEvada 6-2808
Cable Address HEMCOY

1412-18 So. Alameda Street
Compton, Calif.

FOR SALE OR RENT

Rebuilt Northwest Model 25 Truck Crane mounted on 10 wheel Mack complete with outriggers.

HODGE & HAMMOND, INC.
1162 Grinnell Place
New York 59, N. Y.
Dayton 9-5300

Buckeye trench excavators, 160, 203, 224, rotary.
Shovels-Cranes-Draglines, ½-yd. to 5-yd.
Whitcomb 7-ton gas locomotive, 36" ga., rebilt.
Porter, Vulcan 18-ton steam locos., 36" ga.
Locomotives, gas & steam, 5 to 80 tons.
Whirley gantry crane, elec., 120' boom, 37 tons.
C.P.T. air compressor, 1574', diesel.
A-C gyratory rock crushers, 30", 27", 20".
Jaw Crushers, 42x60, 36x42, 20x36, 18x30.
Nordberg 1250 HP diesel elec. generating units.
B-Erie 2¼ yd. shovel front attach., 328-55B.
H. Y. SMITH CO., 828 N. B'way, Milw. 2, Wis.

FOR SALE
Koehring Finisher 18' to 26'
ABERTHAW COMPANY
133 Southampton St.
Boston 18, Mass.
Phone Highlands 5-6700

Caterpillar Tractor, Model 30 PS Series w/ side boom.
Caterpillar Tractor Mod. 20, PL Series w/ end winch.
Auto Car 1943 Model U7144 w/ Enclosed Cab
Boiler Tubes • Pipe
Gas Engines • Machinery

BRADFORD SUPPLY COMPANY
Wayne, Wood County, Ohio — Near Toledo

Because we specialize in the repair and rebuilding of the heaviest construction and industrial machinery, and have the plant, equipment, experience and personnel, we have built up over many years a nation-wide reputation for:

DEPENDABLE USED MACHINES

Lorain ½ yd. backhoe	Browning 20 ton crane	Pioneer 42"x14' feeder	Morris 10" gravel pump
Osgood ½ yd. backhoe	H-K Roustabout crane	Robins 42"x6' feeder	American 10" sump pump
Buckets—all sizes	S-H Krane Krawler	Vulcan 3000# hammer	Pioneer 4x10 screen
Bulldozer on RD-7	Buckeye Model 36 ditcher	Day No. 5 hammermill	Bay City ½ yd. shovel
Butler Carscoop	Link Belt 2½ yd. dragline	Jaeger 7H hoist	Browning erector's truck crane
24x40 port. conveyor	Byers ¾ yd. dragline	B-G Model 522 loader	Universal truck crane
Northwest No. 2 crane	Bay City ½ yd. dragline	I-4 with Hough loader	3300# wrecking ball

For rent.—15 current model cranes, shovels and backhoes, also buckets, frost balls, floats, etc.

3505 W. 51st St. **TRACTOR & EQUIPMENT CO.** **Chicago, 32**

FOR SALE OR RENT

SHOVELS

Lorain 82, 1945 Model Shovel & Dragline.
Bay City Model 45, Shovel, Diesel, New.
Osgood Crane, 1945, With new 38" Magnet.
Northwest 28 Shovel & Dragline.
Lorain 75 Shovel. Diesel.

TRACTORS

(2) Caterpillar D-8's. U-Series. Like new.
(1) Caterpillar D-7, 7M Series. With dozer. Good. $6,800.00.
(1) HD-19 With Bulldozer. Break in time.
(1) Factory new D-4 with Bulldozer. Hydraulic.
(1) D-4 & D-2 with Hydraulic Angledozers.
(1) D-8 in 1H5000 Series. Angledozer. $4,800.00.
(4) DW-10's with 10 yd. CW-10 Scrapers.

TRENCHERS

Buckeye Model 410. Like new.
Cleveland Model 85, 110 and 140.
Buckeye Model C-15, 20' x 42" Wide.
P & H Model 10-30.
Parsons Model 310.

BUCKETS AND ATTACHMENTS

New 2 yd. Blaw-Knox Clamshell. $1400.00.
New 2½ yd. Re-Handling. $1600.00.
New Buckeye Model 70, ¾ yd. Attachment. $875.00.
New Link Belt ⅜ yd. Shovel Attachment. $500.00.
New P & H Model 355 Shovel Attachment. $500.00.
New 22-B Crane Boom. 85%.
Used Lorain 82 Crane Boom. $1,000.00.

A. C. R. COMPANY
19615 Nottingham Road, Cleveland, Ohio
Phone: KEnmore 8000

DERRICKS

1—Lambert Steel Guy Derrick, 3-section mast 115'; 3-section boom (00' with 20' Steel Butt Wheel, Front Block and Saider. Capacity: 10 Ton Flat Boom, 20-Ton 50' Radius.

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.

MINE AND SLOPE HOISTS

1—20,000# Vulcan Dbl. Drum AC
1—35,000# Nordberg Sgl. Drum AC
1—10,000# Nordberg Sgl. Drum AC
1—17,000# Ottumwa Sgl. Drum AC
1—10,000# Lidgerwood Sgl. Drum AC
1—16,000# Lidgerwood Sgl. Drum AC
1—15,000# Wash. Iron Wks., Sgl. Drum AC
1—20,000# Allis Chalmers Sgl. Drum AC
1—20,000# Mundy Dbl. Drum, W/o motor

CRUSHERS

2—#800B Pitman, new
1—12x16 Eagle Dbl. Roll
1—3B American Pulverizer
1—30x54 McNally Pitts. Sgl. Roll
1—10x20 Universal Sgl. Roll Portable
1—24x20 Penn. Sgl. Roll
1—#75 Marcy Ball Mill
1—24x20 Dixie Hammer Mill
1—40x22 Pioneer Dbl. Roll with Hopper
1—30x60 Jeffrey Sgl. Roll AC
1—Mead-Morrison Dbl. Roll, 100 TPH, gas
1—Kem. Van Saun Gearless, complete, AC

DIESEL AND STEAM GENERATORS

Units, 75 to 800 KW with diesel and steam engines

DIESEL CRANES — SHOVELS

1—5 yd. Marion Elec. Shovel. WL control with Diesel MG set. New.
1—9 yd. Page Diesel D/L crane
1—4 yd. P&H Diesel D/L crane, comp.
1—40 Ton IBH Steam Loco crane. 60' boom. Rebuilt. ICC.
1—23½ Ton L.B. Steam Loco crane, 50' boom. Rebuilt. ICC.

HAWKINS AND CO.
154 So. Michigan Ave. Chicago 3, Ill.
Phone: HArrison 7-0725

ASPHALT PLANT

FOR SALE

Complete new Hetherington-Berner Asphalt Plant—50 to 60 Ton per hour capacity — including electric motors and drives. Available due to owner's change of plans.

LORENZ EQUIPMENT COMPANY
547 West Rich St. Columbus, Ohio
Phone—Long Distance 80

SURPLUS EQUIPMENT

1—Manitowoc Model 3500 high lift shovel, Venn-Severin diesel engine, 45' boom, 35' stick, 2 yd. bucket, new Nov. 1946
1—Northwest Model 80-D shovel, standard boom and stick, Murphy diesel engine, approx. 10 years old; also 80' boom, 2½ yd. dragline bucket
2—Marion 362, 1½ yd. shovels, Caterpillar D-13000 diesel engine, new January 1946, with 80' boom
1—Northwest model 85 dragline, 80' boom, 2 yd. bucket, Murphy diesel engine, year 1940
1—Page model 618 dragline, 110' boom, 5 yd. bucket, Page diesel engine, new January 1945
1—Lima Paymaster on cats., General Motors diesel engine—new Dec. 1945
1—Gallon grader, diesel, Model 101, new January 1946
8—Model KR11 International dump trucks, new February 1946, 7½ cu. yd. without top side boards—$2,500.00 each
52—International Model H-542-11C (K-11) cab over engine dump trucks, 7½ cu. yd. without top side boards, 1000 x 20 tires, wheelbase 120", canvas top and side curtains, 4 x 2 drive. Bodies are extra heavy metal; heavy duty Daybrook hoists; Model 450 International engine—$1,200.00 each
(Above equipment located in Somerset County, Pa.)
1—Lima 1201, high lift shovel, 45' boom, 35' stick, Cummins diesel engine, 2½ yd. bucket, new December 1945
(Above shovel located West Virginia)
TO BE SOLD AS IS, WHERE IS,
SUBJECT TO PRIOR SALE

JULIETTE COAL COMPANY
1020 Grant Bldg., Pittsburgh 19, Pa.

SHOVELS - DRAGLINES

NORTHWEST—Model #8, dragline 75' boom, 2¼ cy. bucket, Murphy ME-6 diesel. Excellent condition. $22,000.00
LORAIN—Model #77, shovel 1¾ cy. and dragline 60' boom, Waukesha gas engine. Excellent condition. $10,500.00
MARIONS—(2)—Model #351, shovel ⅝ cy. diesel power (8 months old). $10,000.00
MARION—Model #362, shovel 1¼ cy. air controls, diesel power. Excellent condition. Nearly new. $25,000.00
LORAIN—Model #30, shovel & Backhoe, ⅛ cy. and 30' crane boom, gas power. Excellent condition. ..... $ 7,500.00
INSLEY—Shovel & Backhoe, ½ cy. Chrysler gas engine—used 200 hours. ..... $ 9,850.00
— and many others —

B. F. WALLACE CORP.
Schuylkill Trust Bldg., Pottsville, Penna.

THE MOST COMPLETE AND VARIED STOCK OF RENTAL EQUIPMENT

on the Atlantic Seaboard

NEW, USED AND REBUILT EQUIPMENT IN STOCK

SELECTED ITEMS · IMMEDIATE DELIVERY

PRICED TO SELL

Save Time - Save Money

This Is a Partial List — Tell Us Your Requirements

TRACTORS & GRADING EQUIPMENT

Wooldridge 15 Yd. Diesel Terra Cobras
Mississippi 8½ Yd. Dump Wagons—New & Used
Intl. TD-18 Angledozer
Intl. TD-18 & 10 Yd. Scraper
Intl. TD-9 with B.E. Dozer Shovel
Adams Diesel Tandem Drive Graders
B.E. 3 Yd. Hyd. Scraper
Bay City ¾ Yd. Crane & Dragline
P. & H. 1 Yd. Crane & Dragline
Austin Western ⅜ Yd. Crane & Clamshell
Sheeps Foot Rollers
Buckeye D. D. Power Control Unit
Hough ½ Yd. Front End Loader
Trackson Swing Crane on T-9 Tractor

COMPRESSORS & AIR TOOLS

105'-160'-210'-315' & 500' Gasoline & Diesel Powered Portable Compressors
735' Ing. Rand Stationary Compr. Elec. Power
Breakers—Sinker & Drifter Drills—Sump rumps — Saws — Wood Borers — Riveters — Chippers — Tampers — Spades — Sheeting Drivers — Wagon Drills

BUCKETS

Clamshell—Dragline—Concrete—Stone Grabs —Scraper—Tip-over—Orange Peel.

CRANES ETC. FOR INDUSTRIALS

S & L Cranemaster, solid & pneu. wheels
Hughes Keenan—Diesel & Gas pneu. wheels
Hyster Karry Kranes pneu. wheels
Trackson Swing Boom on Crawlers
Hebard Shop Mule Tractors

CONCRETE ROAD EQUIPMENT

Jaeger Finishers & Spreaders
Buckeye Finegraders
Form Tampers
Pressure Pumps

PIPE LINE EQUIPMENT & TRENCHERS

Intl. TD-18 with Trackson Pipe Boom
Intl. T-9 with Trackson Swing Boom
Cleveland & Parsons Trenchers

CONCRETE MIXERS

½—1—2—& 3 Bag Portable
28-S (1 Yd.) Stationary
Jaeger 2 & 3 Yd. Transit & Trucks

PILE HAMMERS

McKiernan—6—7—9 & 11-B

PUMPS

Centrifugal 1½—2—3—4—6—8 & 10 inch
High Pressure Jetting
Triplex
Diaphragm

ROAD ROLLERS

6 & 10 Ton—3 wheel & Tandem

HOISTS & TOWERS

10—20—35—50—75 & 100 H.P.
Gasoline—Diesel & Electric—Pneumatic—single & double drum—Swingers available.
Tubular Steel Hoisting Towers—Buckets & Hoppers
Jaeger Portable Steel Hoister Towers

MISCELLANEOUS

Portable Generators 1½—5—10—15—30 KW—Gas & Diesel—DC & AC.
Beach All Steel Saw Rigs
Buda Earth Augers
Portable Welders—Gas & Elec.
Stone & Chip Spreaders
Sauerman ½ Yd. Drag Scraper Outfit
Ideal Power Sweepers
Dempster Dumpters
Whiteman Cement Finishers & Rodders

FOR RENT — FOR SALE

FROM STOCK

RENTAL SERVICE CO.

(Division Service Supply Corp.)

4TH & COURTLAND STS. PHILADELPHIA 40, PA.

WE OWN AND WILL DEMONSTRATE THE EQUIPMENT WE ADVERTISE

KEEP COSTS DOWN WITH DEPENDABLE EQUIPMENT FROM WALSH

AIR COMPRESSORS

10—60 Portable Schramms
20—105 Schramms & LeRois
1—160' Ingersoll
10—210' Schramms
5—315' Schramms
4—420' Schramms

AIR TOOL EQUIPMENT

New Drills, Breakers, Air Saws, Borers Points, Spades, Air Hoists
Timken Threading Machines
Air operated Hackley & Union Grouts
Koehring Mud Jack
Cement Gun

MIXERS—Miscellaneous

1—27E Ransome Paver with tower equipment
1—27E Smith
3—27E Pavers
2—14E Pavers
4—28S Mixers—Gas & Electric
1—28S Smith tilting mixer—electric
10—10S mixers
7'—5' & 3½' Mixers
Universal Form Clamps, Tie Locks, Column Clamps, Trench Braces

HOISTS, ETC.—ENGINES, MOTORS, WELDERS

10—Gas & Electric Single & Double drum hoists
1—2-yd. Sauerman scraper outfit
2-Ton 31' span Yale & Towne Cranes
Single drum mine hoists
4-Ton steel stiffleg, hoist & swinger
30 ton steel stiffleg Wiley derrick
2 Car puller hoists
15 Electric overhead hoists
20 New 4-cyl. Continental power units
1 New Murphy ME-46—reasonable
1 Fairbanks Morse 36A 48 HP

BUCKETS

Clamshell & dragline ½-2½ yd.

MISCELLANEOUS

2 New 10 ton Huber Rollers
Jaeger Spreader Machine
Gasoline & Portable Electric Welders & Stationary 200-400 amps.
3 New Portable Atlas conveyors 18"—24" x 30'—42' long
8 sets Manning Maxwell 2-ton trolley assemblies
1 Lot of 2-ton chain hoist trolleys
25-ton Self-governing Duff Jacks
Chicago Booms complete
Pumps—Electric, gas & Steam—all sizes
Concrete—Caisson & Tipover
1 Lot Carrier & York Heaters—Bros Heaters
1 New Rosco Distributor on skids
1 Used Rosco Distributor with truck 1 yr. old

Write for our new itemized list covering many items too numerous to list here. Special prices to dealers for handling.

W. T. WALSH EQUIPMENT COMPANY

12750 BEREA RD. **CLEVELAND, OHIO**

LATE MODEL EQUIPMENT

CRANES: Industrial 50 ton Locomotive Buckeye Model 50, new 1940—Rebilt.
Lima ¾ yd. dragline diesel, 1945
Sterling Krane Kings, 5 ton, 1942
COMPRESSORS: I-R K-500 diesel, 1942
I-R 105, rebuilt
C-P 105, mod. P.G.20, 1942, rubber tires
ROLLERS: Huber 8-12 ton, diesel, 1943
Hercules 10 ton 3 wheel, 24" rear rolls, hdrl.
Littleford 2 ton, model 155, like new
BULLDOZERS: HD-7W, 1946, Baker hdrl. blade, 2100 hrs.
RD6 Caterpillar, hrdl. angle blade, rebuilt
PUMPS: Gorman-Rupp jet. pumps, 6 cyl. Chrysler, new
C-M-C 10" contrif. 6 cyl. Waukesha, unused
Rex 6" sure prime, mtd. Waukesha, rebuilt
BUCKETS: Williams 1½ yd., 40E, late model, rebilt.
Williams ½ yd. new, gen'l purpose
Page dragline, ½ yd., Mod. RH, new
P & H 255A; Trench Hoe, new
DERRICKS & HOISTS: American-Terry, 70 ton, Stiff-leg, 110' boom
Wiley, Model F, 30 ton, Stiff-leg, 80' boom comp. w/cables, new
Steel Stiff Leg, 20 ton, 80' boom, w/2 drum Lambert no power
Price: $1500.00

We own the above equipment
Send for our equipment list

R. A. PARKINSON & SON
519 N. Delaware Ave., Philadelphia, 23, Pa.
MARKET 7-2521

PILE HAMMERS

McKiernan Terry #6-7-10B
Thoroughly Reconditioned
EDWARD EHRBAR, INC.
29 Meserole Ave., Brooklyn 22, New York
Evergreen 9-5570

TWO MC3 MOTO-CRANES

In excellent guaranteed condition

Just like new
Priced to sell quick

Complete with
100 foot booms and jibs

Wire or write for further details

MOTO-CRANE SERVICE INC.
53 W. 7 Mile Road
Detroit 3, Mich.
Phone: TOwnsend 9-4584

For Sale

120 ton Fairbanks Morse
RAILROAD TRACK SCALE
Standard Gauge—48' platform
NORBERG TRACK SHIFTER
Model "S"
powered by 40 HP gas motor
JORDAN SPREADER CAR
Standard Gauge
IRON & STEEL PRODUCTS, INC.
1394 S. Brainard Ave., Chicago 33, Illinois
"ANYTHING containing IRON or STEEL"

FOR SALE

27E Ransome Paver

full caterpillars with boom and bucket
ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.
Phone Highlands 5-6700

FOR SALE

SHOVELS AND DRAGLINES

The following machines are Army Surplus and have been used 50 to 300 hours. They can be put in top condition for 50% of todays new cost. Minor motor and cab repairs are needed. Definite bargains, they must be inspected carefully to be appreciated.

8 Lima 34 shovels	¾ yd.	16 Buckeye 70 shovel-drag.	¾ yd.
3 Koehring 304 draglines	¾ yd.	1 Northwest 25 dragline	¾ yd.
4 P&H 255A draglines	¾ yd.	2 P&H 150 shovels.	½ yd.
3 B-E 15B shovels	½ yd.	1 Byers 65 dragline.	½ yd.
1 Osgood 816 shovel-drag	2 yd.	1 Lorain 82 shovel-drag.	2 yd.
1 B-E 37B shovel-drag	1½ yd.	1 Manitowac 3000A comb.	2 yd.
3 Caterpillar D-7 bulldozers.		1 IHC TD-9 with angledoser hyd.	

We have all types and sizes of good construction equipment available, new and used. Write your requirements to—

MILES & TESTA CO.
JUNG HOTEL R. E. Snyder New Orleans, La.

COMPRESSOR: Schramm 420 electric, capacity 450 CFM, 75 H.P. motor, V belt drive.
DRAGLINE: 4 yd. capacity, 110' boom, 2200 volt, A.C.
DRAGLINE BUCKET: Page 4 yd., medium duty, complete.
TRACTOR: Caterpillar D4, wide gauge, with blade.
DRILLS:
1—Bucyrus Erie 29T with 9" bits and tools, gasoline powered. 1—Diesel powered. NEW condition. 1—27T gasoline.
1—Bucyrus Erie 42T, diesel powered with 9" bits and tools.
1—Bucyrus Erie model 12 Bit Dresser for 9" and 6" bits, complete.
BOILER: 100 H.P., 90 lbs. pressure, complete with oil burner and control equipment. Portable.
PUMP: Worthington 40 H.P. steam driven Centrifugal Pump, 300 lbs. steam pressure, 3550 RPM, with steam regulator; complete, in new condition.
MOTOR: G.E. 40 H.P., 3 phase, 60 cycle, 220-440 volt, 1765 RPM, with V-belt pulleys and belts, starter, etc.
DIESEL GENERATORS: 4—Caterpillar D13000, 6 cylinder, with 74 KW, AC Generators, 3 phase, 60 cycle, 220/440 volt. All complete.
GOODRICH SUPER LONG LIFE CORD CONVEYOR BELT (NEW):
1—Piece 1014 ft.
1—Piece 1017 ft.
1—Piece 268 ft.
42" wide, 5 ply, 42 oz. duck, 7/32" top cover, 1/16" bottom cover, on original reels. ALL NEW NATURAL RUBBER; with or without mechanical parts.
CRUSHING PLANT: Portable, diesel powered.
GYRATORY CRUSHERS:
1—42" complete with motor and drive.
1—Allis Chalmers 9-K and 6-K. 1—Austin No. 8, 20" opening with feeder.
1—Telsmith 16-B, all steel, 15" opening.
JAW CRUSHERS: All sizes 4 x 6 to 48 x 60".
REDUCTION CRUSHERS: Traylor type TZ, size 50"; Kennedy model 37 with motor integral; Symons 4 ft. Cone; Telsmith 42-B complete with V-belt pulley; Allis Chalmers type R322 fine reduction; Traylor type TY, 15x5".
ROLL CRUSHERS: Jeffrey 18 x 24 double roll crusher for coal, coke, cinders, etc. New Holland 14" x 16"; Allis Chalmers 54 x 20", NEW condition.
PULVERIZERS: Jeffry 24 x 18 Swing Hammer Pulverizer, shop No. 1159. Hardinge Conical Ball Mill 6' x 22", manganese steel lined, Herringbone gears, with motor and V-belt drive.
KILNS, COOLERS, DRYERS: 1—Single shell 34" x 20 ft. complete with drive, burner; no motor.
1—8' x 50' brick lined Kiln.
DERRICK HOIST: National 3 drum, 80 H.P., shop No. 4636, with 15 H.P. separate electric swinger, 3 phase, 60 cycle, 220/440 volt.
SCRAPER HOIST: Ingersoll Rand 50 H.P., 2 drum, 220/440 volt.
MINE HOISTS: Single and double drum, 150 H.P., 250 H.P., 400 H.P., 600 H.P., 800 H.P., 900 H.P. and 1000 H.P. All complete with motors and control equipment.
LOCOMOTIVE: Diesel 30 ton, 4 wheel, standard gauge, air brakes.

A. J. O'NEILL
Lansdowne Theatre Building
LANSDOWNE. PA.
Phila. Phones: Madison 8300-8301

AIR COMPRESSORS FOR ANY SIZE JOB

It is wasteful to use a big compressor on a small job or vice versa. RENT or BUY the right size from E. C. A. Same guarantee on rentals or sales.

CRAWLER CRANES, DRAGLINES AND SHOVELS

1—2¼ yd. Link Belt Model K570 Diesel Crane, Ser. No. 2315, with high gantry, hydraulic controlled. Powered by Caterpillar D17000 Diesel engine. Equipped with 80' boom. For either crane or dragline work. Will handle 2½ yd. dragline bucket.
1—1¾ yd. Link Belt Model K370, Ser. No. 2247, equipped with 70' boom, powered by Cat. D13000 Diesel engine.
1—1¼ yd. P&H Model 655-A, combination shovel, dragline and crane, Ser. No. 6426, powered by Caterpillar Model D13000 Diesel engine. Crane boom 75', shovel front 24' boom, 18' sticks, 1½ yd. manganese dipper.
1—1¼ yd. Link Belt Model K360, Ser. No. 1959, powered by Model 6WAKH Waukesha Hesselman Diesel engine with 65' boom. Also have back hoe attachment, boom 25', scoop arm 8'9", pull shovel mast 11'9", with 1½ yd. dipper.
3—1¼ yd. #5 Northwests, Ser. Nos. 4564 and 3427. Powered with 6 cyl. Wisc. Model D84 and Twin City Model TA gasoline engines. With 50' and 60' booms.
1—1¼ yd. Link Belt Model K38 crawler crane, Ser. No. 1530. Powered with 4 cyl. Model WL 51B Waukesha gasoline engine with 50' boom.
1—1 yd. Byers Master Model, Ser. No. 3596, powered by 4 cyl. Hercules Model TXO gasoline engine, with 40' boom.
1—1 yd. Erie Gas-Air Model GA-2 combination shovel and crane, Ser. No. 10879, powered with 4 cyl. Waukesha Model WL55 gasoline engine, with 47' crane boom. Shovel boom 23', sticks 17' with 1 yd. dipper.
3—¾ yd. Koehring Model 301, Serial Nos. 544, 772 and 840. Powered by 4 cyl. Wisconsin Model M gasoline engines. With 40' boom.
1—¾ yd. General Model 907, Ser. No. 2575, powered by 71 HP 8 cyl. Chrysler Industrial engine, with 40' boom.
2—½ yd. Buckeyes, Model 70, Ser. Nos. 5409 and 5411, with 40' boom, powered by 71 HP Chrysler Industrial gasoline engines.
WE OWN 15 CRANES NOT SHOWN ON THIS LIST. SEVERAL CRANES LISTED ARE IN OUR RENTAL DEPT. ONLY.

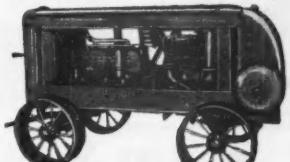
SPECIAL
Bargain Priced Cranes
1½ yd. P&H, Mdl. 700 50' boom, Ser. #2699
1 yd. P&H, Mdl. 600, 50' boom, Ser. #2667.

DERRICKS

5—Stiffleg derricks, 1—62½ ton Insley 54' mast, 70' boom, 12-30 ton BRAND NEW Wiley derricks; 50' mast, 60' booms, 1—15 ton All Steel Derrick 25' mast, 90' boom. 3—4 ton Ingrams, 25'—8" mast, 50' boom.

GUY DERRICKS AND HOISTS

1—75 ton Hoist & Derrick Co., stiffleg derrick, 40' mast, 125'-6" boom, 18' bullwheel, complete. LIKE NEW.
2—20-ton NEW American Hoist & Derrick Co. Mdl. 2-100, steel erectors guy derricks, 123' masts, 100' booms, 16' bullwheels. Complete.
1—American Hoist & Derrick Co. Mdl. 140-3 steam hoist, 9" bore, 10" stroke, without boiler, equipped with air compressor for operating air frictions.



AIR COMPRESSORS
Portable and stationary, belt with electric or gas power, size from 30 cu. ft., 1,000 cu. ft.

PARTIAL LIST ONLY — SEND FOR NEW STOCK LIST — JUST PUBLISHED
All this equipment is owned by us and may be inspected at one of our plants.
WE BUY—REBUILD, SELL AND RENT.

Schaff Bldg., 1503 Race St. PHILADELPHIA 2, PA. Phone Rittenhouse 6-4664
1155 So. Washtenaw Ave. CHICAGO 12, ILL. Phone NE vada 8-2400
30-J Church St. NEW YORK 7, N. Y. Phone Worth 2-0036
P.O. Box 933-J PITTSBURGH 30, PA. Phone Federal 2900

EQUIPMENT CORPORATION of AMERICA

For STEEL Sale

60 Tons 6" H 20# 40'
85 Tons 8" H 31# 40'
73 Tons 10" H 49# 40'
112 Tons 12" H 65# 40 & 45'

Large stock of Angles, Channels, and Standard I-Beams.

QUEENSBORO STEEL CORPORATION
Long Island City, New York
Stillwell 4-2720, 6-5448

TRUCK CRANE

Slightly Used in excellent condition—"Quick-Way" Model "J" mounted on International KB6 Chassis. 20' Boom plus 10' Insert and Trench Hoe Boom with 18" bucket. Chassis driven only 150 miles. Price $6,500.00

WRITE PHONE WIRE

EDWARD EHRBAR, Inc.
29 Meserole Avenue Brooklyn, N. Y.
Evergreen 9-5570

FOR SALE

CRANES

Marion 392—2½ yd. Diesel Crane 100' Boom—New Condition.
Browning #8—20 Ton Steam-Oil Fired—Bargain
Ohio—30 Ton Steam Loco. Crane #3806.
Wiley—30 ton Stiff-Leg—60' Boom—New.

LOCOMOTIVES

25—70 Ton, Four Pocket, all steel HOPPER CARS.
PLYMOUTH—14 ton—36"—Gas. Rebuilt
PLYMOUTH—30 ton—#3940—std. GA. —Cat. D-17,000 Engine
2 WHITCOMB 6 ton 24" Ga.

3—American—10 T.—Stiff Legs—75' Boom.
Niles O.E.T. Crane 20 Ton—3 Ton Aux—46'-6" Span—3-60-440.
1—P & H 255-A New Trench Hoe Attachments.
40—Western 20 Yd. Air Dump Cars.
Ingram 4 Ton Stiff Leg with D.D. GA3 Hoist Both New
10—Sterling Diesel Model HCS195H. Equipped Heil 10 Yd. Rock type rear Dump Bodies. New Jan. 47.

Write R. H. BOYER, Mgr. Equip. Division

CHARLES DREIFUS CO.
12 S. 12th Phila. 7, Pa.
Write, Wire or Phone Phone Bell-Walnut 5050

FOR SALE

1—Austin Western, Model 99M Auto Patrol Grader, equipped with International Diesel engine, 4—14x20 tires and scarifier.
1—Link Belt Model L.S. 50 with shovel front. This machine is practically new.

VILBRO EQUIPMENT CO.
233 North Avenue Westfield, N. J.

1—Acme factory rebuilt 12 ton, 3 wheel roller
1—Gasoline powered 5-6 ton tandem, rebuilt.

ACME ROAD MACHINERY CO.
FRANKFORT, N. Y.

FOR SALE

28-S Smith Concrete Mixer with 20 H.P., 220/440 volt, 3 phase, 60 cycle motor, water tank and non plugging charging chute.

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.
Phone Highlands 5-6700

VULCAN
PILE HAMMERS AND EXTRACTORS
NEW OR FACTORY REBUILT
FOR SALE • • • FOR RENT
327 N. BELL AVE., CHICAGO, ILL.

AVAILABLE FOR IMMEDIATE SALE

One Cleveland Trencher, Model 95
Two D-2 Caterpillar Tractors with Traxon Loader
One R-2 Caterpillar Tractor with Dozer
One D-7, 7M Series, Caterpillar Tractor with Dozer
One D-8, 8-R Series, Caterpillar Tractor with Dozer
One New Surplus Woolridge Scraper
One P & H Truck Crane, ¾ yd.
One Northwest Model 25 Crane and Dragline with Diesel Engine

SPECIAL
Rent or Sell

Two D-8 Tractors with Angledozers, 2U Series
Two Garwood Scrapers, Model 5Z8
One LeTourneau Scraper, Model FP
Three D-8 Tractors, 2U Series
One 802 Lima Shovel and Dragline
One 1201 Lima High Front Shovel
One 820 Lorain Shovel
One P & H 655 Shovel and Dragline
One K 375 Link Belt
One Northwest 25 Shovel
One Galion Patrol Grader
Three Model B Scoopmobile Demonstrators
Two Concrete Mixers
Five Hydraulic Sand Spreaders

Will finance reliable party

The CHAS. M. INGERSOLL Co.
19930 Detroit Road • Call EDison 1010 • Rocky River 16, Ohio
CONTRACTORS EQUIPMENT

For Rent or For Sale

1948 Lima 802—2 yard long Cats 125' boom
1948 Lima 604—1½ yard long Cats 100' boom
1947 P & H 855—2 yard long Cats 100' boom 30' jib
1948 Lima Truck Crane 25 ton Capacity 90' boom 30' jib
1946 P & H (150) Truck Crane 10 ton Capacity 50' boom. Brand new ¾ yard back hoe attachment.
1948 P & H 225 A Truck Crane 20 ton Capacity 80' boom
1940 Lorain M.C. 4 Truck Crane 15 ton Capacity 80' boom

The above machines have been used only on steel erection or hook block work and are as good as new.

THE ROGER SHERMAN TRANSFER CO.
EAST HARTFORD, CONN.
Branches: SPRINGFIELD, MASS. NEW HAVEN, CONN. ALBANY, N. Y.

Bridge Builders & Material Handlers

3 MANITOWOC CRANES

FOR RENT

Valley 3161

V. P. SERODINO, Inc.
7 W. North Bend Rd.
CINCINNATI 16, O.

FOR SALE

1—⅜ Yd. Bay City Model 20 Gas Shovel
1—½ Yd. Link Belt Model LS50 Gas Shovel
1—⅝ Yd. Bay City Model 45 Gas Shovel & Crane
1—¾ Yd. Lima Paymaster, 1947 Diesel Shovel
1—¾ Yd. Byers Model 83, 1942 Gas Shovel
1—1 Yd. Koehring Crane or Dragline, 50 ft. boom
1—1 Yd. Lorain 75-B, Gas shovel, 6¾x8 engine
1—1½ Yd. Manitowoc Speed Crane, 90 Ft. boom
1—180-T-50 Bay City, 20 Ton Truck Crane, 75 ft. Boom
1—1½ Yd. Koehring, 604 Crane, 70 Ft. boom, Dimcel
1—1½ Yd. Northwest 26, Crane & Shovel, Diesel
1—10-B-3, 1—6-B-3 McKiernan Terry Steam Pile Hammers
1—3 Yd. Barber Greene Model 82-A Bucket Loader
1—Rebuilt B-2 Wisconsin Gas engine for 301 Koehring Crane

WE RENT

Cranes, Shovels, Draglines, Steam Pile Hammers, Extractors, Hoists, Boilers, etc.
Also rebuild heavy construction and power plant machinery and equipment.

MERTES MACHINERY COMPANY
1622 S. 1st St., Milwaukee, Wisconsin
Telephone—Mitchell 5-8820

FOR SALE or RENT
ALL LATE MODELS

1—N. W. Shovel, 2½ c.y. new Oct. 1946
1—N. W. Shovel, 1½ c.y.-new April 1946
1—P & H Dragline, 1½ c.y., new June 1948
1—N. W. Shovel, ¾ c.y. Diesel, Backhoe —40' Crane, Dragline, new Aug. 1948
1—Allis Chalmers Tractor Model HD19H, new May 1948
5—D W 10's—used 2500 hours
1—Caterpillar Auto Patrol #12—9K4626
1—Caterpillar D8 Angledozer #8R8933
1—Caterpillar D7 Bulldozer 4T5988

WILLIAMS CONSTRUCTION CO.
Box 145, Middle River, Baltimore 20, Md.
Phone: Essex 1310

For Rent

SPEEDCRANES

LATE MODELS

Manitowoc Diesel Powered Speedcranes for rent. 25, 40 and 50 ton capacities with booms 100' or more, 20' and 30' jibs. Special price on long rentals.

FORSYTHE EQUIPMENT CO., INC.
11 West 42nd St. New York 18, N. Y.
Tel. PEnnsylvania 6-7554

FOR SALE

71'6" 2-Wheelbarrow Heavy Duty American Tubular Tower

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.
Phone: Highlands 5-6700

OVERHEAD CRANES

3-ton P & H Span 31' 10¾". 230 Volts DC. Hoist motor 6 HP—Bridge 6 HP—Trolley 2 HP. Cab controlled. Indoor type. Lift 18'. Price $3350 "as is" or $4450 rebuilt and guaranteed.

Two 2-ton Cranes. Span 15'6". 230 Volts DC. Floor operated.

2-ton Shepard. 15'6" Span. 230 Volts DC.

2-ton Shepard. 18'8" Span. 230 Volts DC.

2-ton Shepard. 23' Span. 230 Volts DC.

2½-ton P & H. Span 33'. Double trolley.

3-ton overhead crane. 20' Span. DC motors.

3-ton P & H. Span 41'8". 230 Volts DC.

3-ton P & H. 42'1½" Span. 230 Volts DC.

3-ton Shepard 16'8" Span. 230 Volts DC.

3-ton Shepard. 18' Span. Floor control. 230 Volts DC.

5-ton Crane. 30' Span. DC motors. 40' track.

5-ton American. 32' Span. Underslung type. Built in 1942.

2 Yd. Milwaukee Bucket Crane. Span 38' 10". Built in 1943.

5-ton P & H Span 41'8". 3 DC motors, 230 Volts.

5-ton Shaw. Span 18'8". 230 Volts DC.

5-ton Shaw Wall Cranes. 27' Reach. 230 Volts DC.

Two *BRAND NEW* 5-ton Shaw Cranes. Span 47'3". 440 Volts AC.

Three 5-ton Shepards. Span 16'8". Floor controlled. 230 Volts DC.

5-ton Shepard. 25' Span. 220 Volts, 3 phase, 60 cycle. Hoist motor 10 HP—Bridge 5 HP—Trolley 3 HP. Speeds: Hoist 35 FPM; Bridge 250 FPM; Trolley 15 FPM.

Five 5-ton Shepards. Span 27½'. Built in 1941.

5-ton Shepard. 30'8" Span. 31' Lift. 230 Volts, 3 phase, 60 cycle.

5-ton Shepard. 56' Span. 230 Volts DC.

5-ton Sprague. Span 18'8". 230 Volts DC.

5-ton Toledo. 37'8½" Span. 3 DC motors.

10-ton Alliance. 58'3" Span. 230 Volts DC.

10-ton Lane. 60' Span. 220 Volts, 3 phase, 60 cycle.

15-ton Alliance. 68'10½" Span. 230 Volts DC.

12½-ton Wood. 37' Span. Built in 1943.

15-ton Ederer. Span 74'4". Built in 1942.

15-ton Shepard. 17'6" Span. 230 Volts DC.

20-ton Case. 52'10" Span. 230 Volts DC.

20-ton P & H. 51'4" Span. 110 Volts DC.

25-ton Northern. Span 47'5½". 230 Volts DC.

WILEY REVOLVER CRANE—MODEL 75 Track gauge 28 ft. Lifting Capacity 32 tons. 360° working span. Boom 101 ft. 4 motors. 220/440 volts AC.

GANTRY BRIDGE CRANE 60 ton capacity. 80 ft. width. 50 ft. lift. Gauge 55 ft. 220/440 volts AC.

ECONOMY COMPANY, INC.

49 VANDERBILT AVE. NEW YORK 17, N. Y.

CUT DIRT MOVING COSTS With Like-New Equipment

7 MISSISSIPPI WAGONS:

Five brand new, two used three weeks. Now reduced $4,000 each below original purchase price. Model 75-8, 8⅛ yd. capacity, 72 h.p. tractors with cab and electric brakes. New equipment guarantee.

2 TERRA COBRAS:

Reduced to $17,000 each. TA Tractor TCY scraper has 18 yd capacity. Used only a few weeks. New equipment guarantee.

ROLLERS AT LOW COST:

HERCULES 10-ton 3-wheel roller. Hercules gas power. Starter, generator, pneumatic scarifier. Now $2,500.

HUBER 10-ton 3-wheel with Mack engine. Starter, generator. Compressor and receiver tank for scarifier. Good operating condition. Now reduced to $2,500.

Wire or phone Harry Maloney for complete details.

SERVICE SUPPLY CORPORATION
20th & Erie Philadelphia, Pa.
Phone: BAldwin 9-1950

FOR SALE

New #36-9300 Simplex Double Leverage Pipe Push & Pull Jacks with ¾" to 4" Jaws & Pilots

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.
Phone Highlands 5-6700

CHECK THIS LIST OF VALUES!

6 Super C Tournapulls Cummings Diesel Engines. Less Than 6 Months Old.

REX 34E Dual Drum Paver.

Rex Pumpcrete, Model 160 Double. Completely Overhauled and Repaired. Approx. 1,000 Lin. Ft. of 7" Pipe.

LeTourneau Model FP Carryall Scraper, 18.00 x 24 Tires.

1 Rex 3 Yd. Horizontal Truck Mixer.

3 Rome Graders, Model 404, powered with Diesel engine.

2 LeTourneau Rooters, Model S3.

2 LeTourneau Rooters, Model K-30.

Buda Earth Drill, Hydraulic, Model HBJ.

1 Universal Crushing & Screening Plant, Model 293Q. Complete with Primary Jaw Crusher, Twin Roll Secondary. All Mounted on Pneu. Tires.

Worthington 315 Compressor, UD18 Diesel Engine, 4 Pneu. Tired Wheels.

Worthington 210 Compressor, Gasoline Engine, 4 Steel Wheels.

LeRoi 315 Compressor, Cat. Diesel Engine, 4 Pneu. Tired Wheels.

Worthington Wagon Drill.

Ingersoll-Rand Compressor, Model GK210, on 4 Pneu. Tires.

Ingersoll-Rand Compressor, Model GK105 on 4 Pneu. Tires.

Ingersoll-Rand Compressor, Model 315A, on 4 Pneu. Tires.

2 Ingersoll-Rand Wagon Drills, Model FM2, with X71 Drifters, Pneu. Tires.

SUBJECT TO PRIOR SALE

COMPLETE STOCK OF INGERSOLL-RAND AND TIMKEN DRILL-STEELS, JACKBITS, MOIL POINTS, ETC.

WRITE . . . . PHONE . . . . WIRE . . . . VISIT

FURNIVAL MACHINERY CO.

"DEPENDABLE EQUIPMENT APPLIED AND SERVICED"

54th at Lancaster Ave., Philadelphia 31, Pa. TRinity 7-5200

SALES . . . SERVICE . . . RENTAL . . . PARTS

. . . BARGAINS

1—Gutternipe 1948 Street Sweeper used one month in demonstration. Price new $8250—$5000.

1—1948 Galion 116 diesel tandem drive motor grader powered by 100 h.p. I.H.C. diesel, 13 ft. moldboard, 14.00 x 24 tires, enclosed cab, machine used only 4 months—$9500.

1—Rebuilt Jaeger Asphalt Paver..$1800.

1—1948 Knickerbocker 6 S Concrete Mixer used 3 months—$950.

1—Rebuilt Koehring 14 S Mixer, 4 wheel pneu., complete with $300 new parts —$1300.

1—New M20 LeTourneau 20 ton crane 18.00 x 24 tires—$1000.

1—HD5 Allis-Chalmers Diesel Tractor with Baker Bulldozer, New Aug. 1947 —$5000.

2—Rebuilt 1947 Galion Chief 10 ton 3 wheel rollers complete with sprinkling attachment, each—$4800.

1—Hercules 10 ton 3 wheel roller, rebuilt—$3000.

1—Used—Galion Chief 10 ton 3 wheel grade roller—$1800.

1—Austin 5 ton 3 wheel gas roller—$900.

1—Buffalo Springfield 5 ton Tandem gas —$1500.

1—1948 Essick 3-4 Ton Tandem roller used 5 months, complete with 2 wheel pneu trailer—$1975.

1—1948 Galion 3-5 ton Tandem roller used 4 months in rental—$2300.

1—Good Roads 5 ton Tandem roller, gas —$950.

1—Rebuilt Austin Western Diesel, Tandem Drive, motor grader, cab, scarifier, 12 ft. blade—$3800.

1—Rebuilt Galion 101 Gas, tandem drive motor grader, 12 ft. blade, scarifier new tires—$4500.

1—New Kohler 1500 Watt 115 volt A.C. Generator set—$500.

1—New Kohler 1500 Watt 110 volt D.C. Gen. set with housing—$400.

2—Rebuilt Herman Nelson Heaters 200,000 BTU gas fired, gas engine driven each—$525.

3—New Schulze gas driven power wheelbarrows pneumatic tired, each—$400.

2—1948 Sullivan 315 Portable compressors, gas, on 2 wheel pneu. trailer, each—$3500.

1—Rebuilt Worthington 315 gas portable compressor 4 pneu. 1 yr. old—$3000.

1—Rebuilt Worthington 315 gas port. compr. 4 pneu. tires, 2 months old—$4800.

1—Rebuilt Worthington 315 gas port. compr. 4 steel—$3800.

1—1948 Sullivan 160 gas port. compr. 2 pneu., used 2 months—$2800.

1—LeRoi 210 port. compr., gas, rebuilt, 4 pneu.—$1200.

1—LeRoi 210 port. compr., gas, rebuilt, 4 pneu., streamlined—$2200.

1—LeRoi 105 port. compr., gas, rebuilt, 2 pneu.—$1300.

1—Schramm 120 port. compr., gas, rebuilt, 4 pneu.—$1000.

1—Schramm 20 port. compr., gas, rebuilt, 2 pneu.—$500.

1—Rebuilt Hendrix ¾ c.y. type TS drag bucket—$400.

1—New 10F Williams ⅜ c.y. clam bucket with teeth—$800.

1—New 10L Williams ⅜ c.y. drag bucket —$350.

1—Rebuilt 1948 Erie ⅜ c.y. clam bucket with teeth—$400.

1—Rebuilt 1948 Hendrix ⅜ c.y. drag bucket—$250.

1—New Good Roads Chip spreader—$1050.

1—Insley K12 gas trench hoe 1947 model, excellent condition—$9000.

1—Byers 83 one year old clam drag, gas, long crawlers, wide shoes, 1 yr. old —$10500.

1—Hanson 31 gas trench hoe, 5 months old, 1948 model—$7600.

Telephone Hilltop 5-0700

GIL BOERS EQUIPMENT COMPANY

2649 W. 95th St. Chicago 42, Illinois

SPECIAL OFFERING

Jacks For Sale

At Prices below original cost

9—Duff-Norton 50 ton 14" rise model No. 5260-BB, high speed self lowering, ball bearing, screw jacks, with large head and foot lift. Height 26".

4—Duff-Norton 25 ton 10" rise, Model No. B-2522, heavy duty, screw jacks. Height 22".

1—Duff-Norton 35 ton, 14" rise, Model No. 3265-BB, high speed, self lowering, ball bearing, screw jack with large head and foot lift. Height 26".

3—Buda, 25 ton, 5½" rise, Model No. 2510. Ball bearing, ratchet journal type. Height closed 10".

2—Joyce, single acting auto. lowering jacks, No. 2028, 20 ton cap., 28" high 19" rise.

2—Joyce, single acting auto. lowering jacks, No. 76-A, 10 ton cap., 22" high, 13" rise.

2—Joyce single acting auto. lowering jacks, No. 1922-A, 15 ton cap., 22" high, 13" rise.

2—Joyce "Jackmaster" screw jacks, 13¼" x 10", 16 ton cap., 13" overall height.

1—Joyce "Jackmaster" screw jack, 2" x 12", 20 ton cap., 15½" overall height.

ACORN IRON & SUPPLY CO.
915 No. Delaware Ave. Philadelphia 23, Pa.
Phone: WAlnut 2-7070

FOR SALE

International TD 18. New Surplus Hydraulic Angle or cable bulldozer attachment.

1—Sterling truck tractor 1947. Powered by 150 h.p. Commins diesel and 60 ton 1947 Rogers Trailer. Equipped with extra fuel tanks—catwalk and heavy duty Garwood winch. P & H model 255A. ¾ cubic yard shovel. Powered by Buda Diesel. Like new.

JOHN J. SHANNAHAN, INC.
17 Electric Ave. Brighton, Mass.
ALgonquin 4-6705

EQUIPMENT CLEARANCE

1—Buckeye Trencher - Model 12-91. New in 1947 - Wheel 24" x 5½'. Buda Engine.

1—AC - HD 7 - Tractor with Pusher Blade. 1 yr old.

1—Austin Power Pick Up Sweeper. 4 Pneu. Tires, Rebuilt. Bargain.

1—Austin Tandem Roller 8-ton - (used).

CASEY & EMMERT, INC.
1424 W. Ohio St. Chicago (22), Ill.
CONSTRUCTION EQUIPMENT

FOR SALE

1—TL 20 LORRAINE TRUCK CRANE NEW

complete with bucket. Price $16,000, sacrifice. Also 1 TD 14 international bulldozer—good condition, price $5,500. 1 75 B Lorraine shovel from 1¼ yd. bucket, price $1,000.

D'ORIO CONTRACTING CO., INC.
162-28 75th Road Flushing, N. Y.
Telephone Republic 9-2290

PRICED TO SELL!

K-11 INTERNATIONAL ARMY TRACTORS

11.00 tires; air, gas, ready to go. 7 to choose from. Price $1,750.00

LOWBOYS, 16 ton, 30 Ton single and Tandem axle. Price $1,500.00 to $2,250.00

Army 6x6 G.M.C. Price $1,050.00

50 other trucks in stock.

METZGER
1040 N. Grand St. Louis, Mo.

SURPLUS STRIP EQUIPMENT, FOR SALE
One 80D, N.west Dragline, Murphy Diesel Power.
One Model 8, N.west Dragline, Murphy Diesel Power.
One Model 5 N.west shovel, Wisconsin gas Power.
One Model 5, Heavy Duty Quarry type, N.west, Murphy Diesel Power.
All of this equipment in extra good working condition, and working now.
J. F. MULLIGAN COAL CO., INC.
Greenville, Kentucky

FOR EVERY
BUSINESS WANT
"Think Searchlight First"

PAVER

1946 RANSOME-DIESEL MODEL 34E-DUAL DRUM

See It Operate

Ransome's Latest Machine

You Saw One Operating at Chicago

SAVE $12,000 ON YOUR NEXT JOB

Mfg. New 1946—Serial No. 15655
36' 9" Elevating Type Power Boom
Hydraulic Controls—Dual Drum
800 Gallon Auxiliary Water Tank
Cummins HB1D600 DIESEL ENGINE

PORTABLE COMPRESSORS

60 CFM Chicago (Gas) 4 Pneu.
105 CFM Worthington (Gas & Diesel) 4 Pneu.
105 CFM Ingersoll (Gas) with Ford Truck.
210 CFM Worthington (Gas & Diesel) 4 Pneu.
315 CFM Worthington (Gas & Diesel) 4 Pneu.
500 CFM Worthington (Cat Diesel) Like New.

MIXERS

NEW & REBUILT

3½ S—Ransome Tilter
3½ S—Ransome Non-Tilt
6 S—Ransome Charge Chute
7 S—Rex & Ransome Pow Loadg
10 S—Ransome Chg Chute
14 S—Ransome Chg Chute
16 S—Ransome

Inspect and Be Convinced

AMERICAN AIR COMPRESSOR CORP.
Dell Ave. & 48th St.
North Bergen, N. J.

SALE or RENT

1—MC-4 Lorain Moto Truck Crane. 1944.
2—10-ton American Terry all steel Stiff Leg Derricks.
2—D8 Tractors 2U Series with Angledozers. 1947.
1—15-B Bucyrus-Erie Crane. 1942.
1—304 Koehring Diesel Shovel. 1946.
1—Model 82 Lorain Diesel Shovel. 1945.
4—Euclid 15 yd. Diesel Trucks. Bottom Dump. 1945.
1—8-ton Porter Std. Ga. Gasoline Loco. 1940.
1—30-ton Plymouth Std. Ga. Gasoline Loco. 1943.
1—45-ton G. E. Diesel Electric Locomotive. 1940.
1—65-ton Whitcomb D. E. Loco. 1943.
1—80-ton Lima Type 0-6-0 Switcher. 1944.

B. M. WEISS COMPANY
Girard Trust Co. Bldg. Phila. 2, Pa.
Rittenhouse 6-2311

FOR SALE

1—Transit-Mixed Concrete Plant having 100 Ton 3 compartment aggregate bin with 250 bbl. cement compartment, batching equipment and electric powered cement elevating equipment.
6—Athey Wagons, Model E13, (13 Cu.Yd.) Bottom Dump (unused).

MAHONEY-CLARKE, INC.
217 Pearl St., N. Y. C. WH-3-0760

LATE MODELS BULLDOZERS—

3—CATERPILLAR D-7 hydraulic & cable bulldozers, 3T & 4T series
2—INTERNATIONAL TD-18 wide gauge hydraulic & cable bulldozers. 1948
2—INTERNATIONAL TD-14 wide gauge hydraulic bulldozers. 1947
1—CATERPILLAR D-4 hydr. bulldozer & Hyster winch. All shop-repaired. Will consider trade-ins.

BENDIX MACHINERY CO., INC.
401 Broadway, New York 13 Tel: Canal 6-5693

FOR SALE

Reliance Crushing Plant

15" x 30" Crusher—38' Bucket Elevator
50" x 17' Roller Screen—100 Ton Capacity Bin
2 Gaso. Engine Power Units

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.

Bargains in used CONSTRUCTION EQUIPMENT

AIR COMPRESSORS

551 AIR COMPRESSOR, JAEGER, 210 cu. ft. Diesel powered, 2 stage, air cooled. 1948 model; has been used only 30 days...$4,850.00

553 AIR COMPRESSOR, INGERSOLL-RAND, on skids, suitable for truck or trailer mounting, 55 cu. ft. air cooled with 4 cyl. engine. Late type. Good condition.....$450.00

554 AIR COMPRESSOR, GARDNER, DENVER, 210 cu. ft.; "Caterpillar" engine, 4 steel wheels. Very late and perfect cond.$4,895.00

555 AIR COMPRESSOR, 4 cu. ft.; gasoline engine driven, wheelbarrow type mounting. Hose and tire chunks included; built by Westinghouse. Government Surplus. Brand new. Several available. Each.....$120.00

556 AIR COMPRESSOR, GARDNER DENVER, Diesel 365 cu. ft.; "Caterpillar" engine, 4 steel wheels. A-no. 1 condition...$3,995.00

557 AIR COMPRESSOR, JAEGER, Portable, 60-75 cu. ft.; two stage, pneumatic tire wheels, starter. 1948 model. Nearly new..$1,395.00

558 AIR COMPRESSOR, GARDNER-DENVER, Diesel 500 cu. ft. capacity, 1948 model. Steel wheels. Used less than 3 weeks...$9,350.00

TRACTORS, RUBBER TIRED, LOADERS, ETC.

533 TRACTOR AND LOADER, MINNEAPOLIS-MOLINE, large size, Model UTI industrial, Serial No. 5584019F, dual rear tires, electric starter, etc. Equipped with Lull Model 3D hydraulic loader. This is late model equipment. Price, f.o.b. Paducah Branch.....$3,000.00

ELECTRIC GENERATOR SETS AND MOTORS

535 GENERATOR SET, DIESEL, Cummins engine. 25 K.W. gen. 120/208 volt, AC. Voltage regulator and elaborate instruments and panel. New—Government surplus...$2,675.00

537 MOTOR, HOWELL, Electric 50 H.P. 220/440 volt, 3 phase, 720 RPM, fully enclosed, fan cooled. Nearly brand new.....$975.00

538 GENERATOR SET, MASTER, Model MGS, RCW, 2819, skid mounted, with 4 cyl. Wisconsin air cooled engine, alternating current, 5 KVA, 120 volt, single phase, 60 cycle. Use one week. New guarantee.....$850.00

ENGINES—POWER UNITS

541 ENGINE-POWER UNIT, "CATERPILLAR", Model 9500-G, gasoline, 80 to 95 H.P. at 700 RPM, 4 cyl. radiator cooled. This engine can be adapted for butane or natural gas. Price, f.o.b. Paducah Branch.....$600.00

544 ENGINE-POWER UNIT, "CATERPILLAR", Diesel D8800-Y. Late model. Good condition.....$2,950.00

545 ENGINE-POWER UNIT, "CATERPILLAR", Diesel D13000. This engine has just been rebuilt at a cost of over $2500.00. Our price to move quick, f.o.b. Evansville, Indiana.....$3,975.00

SHOVELS, CRANES, DRAGLINES

505 SHOVEL, NORTHWEST, Model 80D, 2¼ yd. Manufactured 1946. Excellent condition. Price.....$40,000.00

506 DRAGLINE, P & H, 3 yd., Model 955, Serial No. 5958. Diesel powered Long "Tracks"; 80 ft. boom; 3 yd. Page bucket; 1500 Watt Kohler light plant. Approximate weight 160,000 lbs. New in 1940. Good Condition.....$25,000.00

507 SHOVEL, MARION, Diesel, crawler, Model 362, "Caterpillar" D13000 engine, 1¼ yd. Good working condition.....$17,500.00

511 HYSTAWAY, CRANE-DRAGLINE ATTACHMENT, complete for "Caterpillar" D7 Tractor. Perfect. Used less than 200 hours.....$4,500.00

GRADERS

501 MOTOR GRADER "CATERPILLAR", Diesel Model No. 112, tandem drive. Good condition. Brand new tires. Price.....$5,500.00

502 MOTOR GRADER, "CATERPILLAR", Diesel Model No. 11, tandem drive. A bargain at.....$3,500.00

MIXERS

547 MIXER, JAEGER, Model 2½-S, ¼ bag, tilting drum type; powered by Wisconsin air cooled engine. Equipped with pneumatic tires, water regulator. In good condition.....$395.00

548 MIXER, JAEGER, 1-bag, non-tilt; with power loader; mounted on 2 pneumatic tires. A real bargain at.....$585.00

TRACTORS, DOZERS, SCRAPERS

515 TRACTOR AND DOZER, "CATERPILLAR", D8 with LeTourneau cable controlled bulldozer and rear mounted LeTourneau power control unit. Just been reconditioned. First-class.....$17,500.00

517 TRACTOR AND DOZER, "CATERPILLAR", D6, streamlined, 6 cyl. with LeTourneau cable controlled bulldozer, double drum power control unit, tilting type blade. Machine reconditioned, cleaned and painted. Priced for quick sale.....$7,500.00

519 TRACTOR AND DOZER, "CATERPILLAR", R4, with rear power control unit, LeTourneau angledozer and Hyster towing winch. Just out of shop.....$3,975.00

522—TRAXCAVATOR, "CATERPILLER", D4, equipped 1 yd. 73 in. bucket. Reconditioned and ready to go.....$5,250.00

524 TRACTOR AND DOZER, "CATERPILLAR" D7, 4T series. 2300 hrs. on hour meter, LeTourneau bulldozer and double drum power control unit. Reconditioned here in our shop. Shop Repair Order available for customer's inspection.....$11,000.00

528 TRACTOR AND DOZER, "CATERPILLAR", D8, equipped with LaPlant-Choate hydraulic bulldozer, electric generator. This is a good, clean tractor. F.O.B. Paducah, Ky.....$7,800.00

529 TRACTOR "CATERPILLAR", D8, LaPlant-Choate hydraulic dozer. Very good condition. F.O.B. Evansville.....$8,000.00

531 BULLDOZER ATTACHMENT, NEW, for International TD14 standard gauge tractor, Buckeye dozer, cable type; two available, EACH.....$625.00

MISCELLANEOUS

560 WAGON DRILL, CLEVELAND, Model DB 30, pneumatic tires. Bargain.....$1,095.00

561 ROLLER, HUBER, 3-wheel 5 ton gas engine. First class condition. Price..$1,695.00

562 POWER CONTROL UNIT, LeTourneau, Model R7, rear mounted for "Caterpillar" D6 tractor. Can be adapted for D7 and D8. Never used. Price F.O.B. Paducah Branch.....$950.00

565 CHAIN SAWS, ATKINS, electric 4 cyl. engine with generator; electric cable; 46" saw; all accessories and brand new. One available. Big sacrifice.....Each $985.00

566 PULVI-MIXER, SEAMAN, Model MHD 72W, with Buda 6 cyl. engine. Rebuilt. A No. 1 condition.....$900.00

570 PUMP, JAEGER, centrifugal, Model 4XP, Serial No. P8396 30M GPH complete $396.00

571 PUMP, JAEGER, centrifugal, Model 2 P, heavy duty. Cannot be told from new..$275.00

575 CRAWLER WAGON TRAILER, ATHEY, 15 ton capacity, 18" tracks. Chassis only. By installing bunks or bolsters can be used for logging or pipe hauling.....$750.00

576 FLOOR FINISHER, WHITEMAN, gas engine, 48" rotary. Good condition...$250.00

For complete information and catalog, write or call F. L. Bennett, Sales Manager, 800 W. Main St., Louisville, Ky., Wabash 1378.

Roy C. WHAYNE SUPPLY COMPANY
EVANSVILLE, IND. LOUISVILLE, KY. PADUCAH, KY.

FOR SALE

Immediate delivery
From our own warehouse
new and used

Wide Flange Beams

26 pcs.	8" BPS Beams	36#	60'
100 pcs.	10" BPS Beams	42	35'
27 pcs.	10" BPS Beams	42	60/65'
50 pcs.	12" WF Beams	36	19'10"
25 pcs.	21" WF Beams	112	40'
20 pcs.	30" WF Beams	116	34'/37'6"
25 pcs.	36" WF Beams	300	40'

ANGLES—2 x 2 x ¼ to 8 x 8 x 1
PLATE—3/16" to 1½" thick
CHANNELS—4" to 15"
SHIP CHANNELS—6" to 12"

We cater particularly to engineer's and contractor's structural steel needs. We carry a complete line of new structural steel shapes, such as standard and wide flange beams, angles, channels and plate. We suggest that you contact us immediately for any material you may need.

HY DRACHMAN STEEL Corp.
Warehouse
14-23 34th Avenue Astoria, L. I.
AStoria 8-8023—8096
Main Office
563 E. Tremont Ave. N. Y. 57, N. Y.
CYpress 9-5440-1

FOR SALE

4—Caterpillar DW-10 Tractor Units with W-10 Buttom Dump Wagons and Athey FD-10 Trailers. Combination units for earth stripping and rock hauling.

1—Model 40-A Lorain Crane and Dragline 35 ft. boom—tagline—¾ yd. dragline bucket. Cat. D-4600 Diesel Engine. 30 inch crawler pads.

6—Euclid Bottom Dump Earth Hauling Units —three Model 8FDT with 21.00 - 24 tires —three Model 43FDT with GM Diesel Engines with 21.00 - 24 tires.

5—Euclid Bottom Dump Earth Hauling Units —Model 38FDT—new May 1948—approximately 750 hours of operation.

1—Euclid Loader—Model BV5—Serial No. BV-63. New April, 1948.

2—Caterpillar No. 12 Motor Graders.

1—Caterpillar D-7 Tractor with Model T-7 Traxcavator—2 yd. bucket. Serial No. 3T-6880. Very good condition.

1—Sullivan 365 cu. ft. Air Compressor for mounting on tractor.

4—"Super C" LeTourneau Tournapulls with TLP Carryall Scrapers. Good rubber all around.

6—Insley Bottom Dump Earth Hauling Wagons. These are also excellent units for hauling gravel or crushed stone.

1—Fruehauf Tandem Heavy Duty semi-trailer, Model CPT.

1—80-D Northwest Shovel with Murphy Diesel Engine, 2½ yd. dipper.

1—Link-Belt Model K-580 Shovel. Serial No. 2707. New May 1948. 631 hours of operation—3 yd. Esco Dipper.

2—Jaeger Concrete Mixers, Model 11-EL and 14-EL.

This equipment located at our yard in Kirkwood, Missouri, or on jobs near St. Louis, Missouri. We also have many other items of used construction machinery for sale.

O'DELL & RINEY CONSTRUCTION CO.
Box 3775 Kirkwood 22, Missouri
Phones: Terryhill 3-0780—Terryhill 3-0781
Kirkwood 3968

FOR SALE

1—Northwest Model 80D-2½ cu. yd. crawler shovel, crane/drag combination, Murphy Diesel engine.
2—Northwest Model 25 crawler pullshovel crane combination, diesel engine.
2—Northwest Model 25 crawler cranes, gas engine.
1—Northwest Model 25 diesel truck crane, 60' boom.
1—Bucyrus Erie 38-B 1½ cu. yd. crawler shovel, General Motors diesel engine.
1—Marion Model 371 crawler crane/drag combination—gas engine.
1—Manitowoc Model 2000 crawler crane/drag combination—diesel engine.
1—Lima Paymaster crawler pullshovel crane combination—gas engine.
1—Lorain 1¾ yd. crawler diesel shovel.
1—Lorain Model 40 Truck Crane, 35' boom mounted on 10 wheel Mack.
1—P & H ½ cu. yd. crawler pullshovel—gas engine.
1—Koehring Model 205 cruiser crane.

HODGE & HAMMOND, INC.
1100 E. 156 St., New York 59, N. Y.

700 TONS ALL NEW Tractor, Grader & Scraper Parts

Cutting edges of all descriptions
Full line of track frame assembly
Rollers—Idlers—
Sprockets—Chains, etc.
Also Fair Leads—
Miscellaneous Parts

JULIUS HEBENSTREIT, INC.
56-15 58th St. Maspeth, L. I.
Tel. DAvenport 6-1461
Cable: Habenjul New York

FOR SALE AT A RIGHT PRICE:

1—Sterling Diesel Tandem Tractor with a new H.B. 600 Cummings Motor. Tractor completely rebuilt two months ago by Sterling Motors.
1—90 Ton Rogers "I" Beam Trailer.
1—Rogers Low-boy with 80 Ton Drop Deck. 750x18 Tires.

WANTED:
1—Model 32 Hanson Shovel Front.

Write **T. J. KILMAIN SALES CO.**
NORTH MT. VERNON AVE. UNIONTOWN, PENNA.
or call Uniontown 5400

NORTHWEST
80-D 2½ YD.
Shovel-Dragline
McCLUNG-LOGAN EQPT. CO.
Key Highway & McComas St.
Balto 30, MD. Tel. South 2560

TRENCHING MACHINE

Cleveland Baby Digger, Model 95, with trailer on Pneumatic tires. Serial #2385. Inquire

C. F. GILGENBACH
R. D. #1, Elyria, Ohio
Phone, Elyria 4-6148

FOR SALE

1—Lima Paymaster
1—Lorain L-41
1—1½ cy Osgood, Air controls
1—Lorain 60 with 1½ cy front end
2—1¼ C.Y. Lima, air controls
1—International 1-6 bulldozer
5—D-7 Tractors
1—Austin Western 99M Grader
1—Austin Western Elevating Grader
1—H.D. 10 AC Tractor-bulldozer

FOR RENT

1—1¾ cy Osgood, Air controls
1—Lorain Moto Truck Crane
1—D-8 tractor-Bulldozer
1—600 Compressor
2—Wagon Drills
1—Dust Collector
4—Road dump Euclid Trucks
Complete paving and Road equipment.

TUCKAHOE CONSTRUCTION CO., INC.
116 Columbus Ave. Tuckahoe 7, N. Y.

FOR SALE

1—TD9 International Tractor w/Bucyrus Bull Grader
1—T6 International Tractor w/Bucyrus Bulldozer
1—Barber-Green Ditcher 44C
1—Insley Shovel/Backhoe Combination
1—10 Yard Woolridge Scraper
1—3 wheel 7 ton roller

FERGUSON CONSTRUCTION CO.
137 Boulevard, NE
Atlanta, Georgia

FOR SALE OR RENT

Link Belt Truck Crane

New 1947. T 90—Sectional Boom up to 122 ft.—Back Hoe with High Gantry and Extra Counter Weight—Clam Shell and 3,000 LB. Vulcan Drop Hammer with Leads. Used about six months.
FS-7325, Engineering News-Record
330 West 42nd Street, New York 18, N. Y.

FOR SALE

LINK BELT CRANE

1½ yd. (diesel)
80' boom clamshell digging bucket and fairleads. Wide cats. Completely overhauled.
HEDCAR EXCAVATING CO.
15 William St., Suite 1514, N. Y. 5, N. Y.
Hanover 2-8194

Cut Prices on Surplus! Supply Limited - Order Now!

PORTABLE ELECTRIC GENERATING PLANTS—NEW

F.O.B. BALTIMORE

3 KVA Single or 3 Phase. Suitable for any one needing an auxiliary source of power. Delivers 3,000 watts at 120 volts 3 phase or three 1,000 watts, single phase. 4-cylinder gas engine 9.5 H.P. or generator speed. Control panel has mono switch, circuit breaker and fuses, frequency meter, volt meter, ammeter, charging meter, oil pressure gauge. Made by Hobart Bros. Mfg. Co.

Special Price For Contractors

$325 Each

JACKS New

15 TON RATCHET LEVER

15 Ton Ratchet Lever Jack. Automatic Lowering Ratchet Jack. 15 Ton Capacity. Height closed 28" Rise 19". Wt. 94 Lbs. 60" Handle. Extra heavy base with foot forged to the rack bar, insuring maximum strength at this point. Jack handles easily because it is in perfect balance when lifted by convenient handles.

$15.75 Ea — Lots of 50
$17.50 Ea. — $19.75 Singly
List Price About $72.00

NEW HYDRAULIC

Heim-Warner or Walker
5-Ton Hydraulic Jacks.
Height 9". Rise 9"/16.

$11.75 Ea. 2 or More
$9.75 Ea. 12 or More

WALKER 5-TON JACK

Double screw pick, unused. Complete with handle. Height 8½". Rise 10". Rugged nail-lobbs construction. Gears operate on large ball bearings.

$4.00 Ea. 6 or More

DeVilbiss Pressure Feed Tanks

5 Gal. $39.50 Ea.
10 Gal. $57.50 Ea.

Complete with gauges and pop-off valve. 110 Lb. Pressure. Used but in good condition.

NEW HEAVY COAL HEATERS

$3.50 Each
LOTS OF 5

These are those used by Army as tent stoves. Burns coal or wood. Ideal for heating small garages, for campers or sportsmen. Come complete with shovel, poker and shaker. Heaters are rusty and require blacking to look like new.

BRAND NEW BOLT CUTTERS

Length 36". Treated with protective coating. A highly serviceable tool with sure positive action.

$5.50 Each
LOTS OF 4
$5.00 Each
DOZEN LOTS

NEW DUST RESPIRATORS

For painters and workers in dusty places. May be worn with goggles. Adjustable head straps. Washable. All rubber with gray felt.

$3.00 Dz.
$2.40 Dz. 5 DOZEN LOTS

YALE CHAIN HOISTS

5 TON NEW — Spur geared. Ball bearing. Highest quality steel. $237.50 value. $177.50 Each

2 TON USED — Spur geared. Ball bearing. Used but in good condition. $45.00 Each

BALL PEIN Hammers New

Fine Quality Hammers. Hardwood handles. Made by Leading Manufacturers.

16 OZ. $9.00 Doz.
20 OZ. $12.00 Doz.

FIRE HOSE

USED, Per Foot 35¢

50-ft. lengths. Cotton hose, lined with rubber. 2½" male and female brass couplings. With Underwriter's label.

NEW! WAR SURPLUS UTILITY TRAILERS

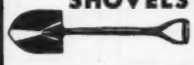
F.O.B. KINGSPORT, TENNESSEE

With trailer in excellent for mounting air compressors, welders, and light plants. As a utility trailer which can be attached to a pick-up or passenger car for all sorts of light tools, equipment and material handling. Capacity 1 ton. Four pneumatic Firestone tires, size 6.00-16. Timken bearing wheels. Heavy steel frame. Originally designed for the army as a bomb trailer.

SPECIFICATIONS—57" from front to rear axle. 39½" width between wheels. 97" overall length. 42" overall width. Weight 465 lbs. Complete with tires: Firestone 6.00 4-4 Ply. Timken-bearing wheels. Capacity: Approximately 4000 lbs.

$79.50 Each
3 or More $75.00 Each

"D" HANDLE SHOVELS



Short "D" handle. Round point. New. Treated with protective coating.

$9.00 Doz. F.O.B. Cinti.
$7.50 Doz. F.O.B. Los A.

12 Ft. STEP LADDERS NEW

$8.00 Each
6 OR MORE
$7.50 Each
50 OR MORE

Ladders are new, but shelfworn from storing in storeroom. A sensational buy — act quick! A durable, economical ladder strongly constructed of selected spruce. Steps supported by ½" truss rods and hardwood block. Bottom step supported by angle braces. Complete with bucket shelf board. Rack legs are cross doweled and braced with center rail.

New 300-Lb. ANVILS

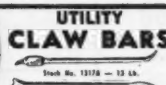
Rugged and strong — fine quality smooth finish.
20½" long—16" high.
$22.50

FIELD TELEPHONES

Used by the Signal Corps. Clear voice reproduction up to 3 miles. Has bell crank and carrying strap. Easy to attach 2-wire connection. Complete with batteries. Used but excellent condition. Ideal for construction markets.

SET OF 2
$25.00

UTILITY CLAW BARS



Stock No. 13178 — 13 Lb.

Stock No. 13179 — 15½ Lb.

Bars, but shelfworn. Two styles. 13 Lb. and 15½ Lb. 1½" Diameter. 42" Long. Manufactured for governmental as railroad car door opener and tire bar. Hook and claw ends. Adaptable for all heavy use.

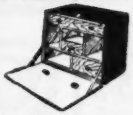
$9.00 Per Doz. — Government Used price to dealers — $6.00 Each.

BRAND NEW MACHINISTS' VISES

Swivel base, replaceable serrated jaws. Anvil. Pipe jaws included on all except 5" models. (Not War Surplus)

2½" $4.10 Ea. — 4" $7.25 Ea.
3" $4.95 Ea. — 5" $9.75 Ea.
3½" $6.00 Ea.

CONTRACTORS' PORTABLE FIELD DESKS



Easily worth $25.00. Waterproof. Sturdily built. Metal bound fiber case 29" wide, 22" high, 16" deep. Three drawers, four pigeon holes. Solid brass pull handles. Two brass rod rails. Take insides out and use for trunk. Used, but in excellent condition.

$5.75 Each

HEAVY DUTY 2 WHEEL HAND TRUCKS

Type "B" Heavy duty-steel bound. Length of handles — 60", Width 23". Rear 7" Size of wheels (Steel), 11" x 2½". Weight approx. 110 lbs. Used. Good condition.

$5.75 — 6 or More
$7.50 — Singly

MORE OUTSTANDING BARGAINS

Wood Blocks, New, 16 Lb. Choice of Steel Bound or Laminated ..... $9.00 Dozen
Tool Tongs, New, Weight 17½ Lbs. Length 42" ..... $1.00 Each Minimum Order 6
Bench Vises, Used, Excellent Condition. Tubular Steel, 35 Morse with 6" ..... $7.50 Each
Monkey Wrenches, New, Pexto 12" Wood Handle ..... $10.20 Dozen
Forges, New, Shelfworn for blacksmiths, 12" x 16" complete with blower ..... $1.75 Each
Breast Drill, New, Millers Falls, No. 130-B. 2 speed ..... $4.75 Each
Wedges, New, for Pneumatic Hammers, Length 24". Complete with 1" x 6" Shank. Wedges 3" x 2" x 12" ..... $21.00 Dozen
Hundreds of other bargains available. Write for descriptive literature or outline your requirements and we shall quote prices.

4-WHEEL PNEUMATIC TIRE PLATFORM TRUCKS

48" long, 30" wide, 39" high. Complete with trailer hitch. Made by Chicago Caster Co. Used, but in excellent condition.

$49.50 Each

CROSS CUT SAWS

$2.50 Each

5 FT. ONE MAN. Tenth tooth. Assorted makes. Disston and Atkins. NEW but shelfworn. Cast steel straight back. Packed by Government in Canvaleen.

MINIMUM ORDER — SIX

CABLE BLOCKS NEW

McClintock 8" Sheave. Ball bearing. For Cable up to ½". Same size Block also available for ¼" Cable. Specify size desired when ordering.

$12.00 Dozen

TROUBLE LAMPS

BRAND NEW. Rubber handle with push-switch. Heavy metal guard with reflector. Heavily insulated cable. (Not War Surplus).

25 FOOT $1.75 Each
50 FOOT $2.75 Each

TERMS: Net 10 days to rated concerns. Others please send check with order. All items F.O.B. Cincinnati unless otherwise specified.

JOBBERS WHOLESALERS DISTRIBUTORS

ROSE BROTHERS CO.

1400 HARRISON AVE., CINCINNATI 14, OHIO

STEEL WALL FORMS FOR SALE

#14GA. VERTICAL & HORIZONTAL TYPE

KENN EQUIPMENT CO., INC.

205 Van Brunt St. **Brooklyn, New York**

Triangle 5-0899, 0841

PAVING EQUIPMENT BARGAINS

In guaranteed good operating, mechanical condition, ready for work

1—Dual Drum 34E Koehring Paver
1—Large Drum Koehring 2A, 27E Paver
1—Byers ½ yd. Crane (Caterpillar Diesel Power)
1—P & H 1 yd. Crane
1—Hobart gas driven Arc Welder, 300 AMP
1—Cedar Rapids Jaw Crusher 9 x 36
1—Buckeye Spreader, Drag type, Model 12
1—C. H. & E. Triplex Road Pump Model 20
1—C. H. & E. Triplex Road Pump Model 11
1—Flexplane Finishing Machine (Holtsal) 22 ft. steel wheels, Waukesha motor
1—Jaeger Finishing Machine 20 to 25 ft.
1—Jaeger Finishing Machine 20 to 25 ft. Type H, Waukesha motor.

HUNTER TRACTOR & MACHINERY CO.
329 South 16th St., Milwaukee 3, Wisc.
ORchard 2-6580

FOR SALE OR RENT

ALL LATE MODELS

1 P&H Shovel, 1055 LC, 2½ c.y. New Aug. 1948
1 P&H Shovel, 1055, 3 c.y. New Aug. 1948
1 80-D N.W., 2½ c.y. New Feb. 1948
2 Manitowac 3000A, 1¾ c.y. New Mar. 1947. Combination drag and shovel front
1 Lorain 820, 2 c.y. New Mar. 1947. Rock bucket
4 Caterpillar D-8, Late models, with double power winches

FOR SALE

4 Euclid Dumps, 9 c.y., 150 H.P. Cummins. New Sept. 1948
16 Ward La France Trucks, D1C Models, 12-14 ton payload. New Jan. 1948
1 Wagon Drill, Ingersoll Rand. New Nov. 1948
1 Highway Drill. New Nov. 1948
1 Coal Loading Bucket, 2½ c.y., 6 teeth, for Manitowac 3000A Shovel. New
2 Drag Line Buckets, 2 c.y., slightly used

BOWER MINE, INC.
Box 1589 CLARKSBURG, W. VA.
Telephone: Clarksburg, W. Va. Flemington 79

Complete Dual Drum Paving Outfit for $25,000.00

Consisting of:

—Koehring 34-E Dual Drum Serial 19376
—RB Finegrader Serial 170
—Koehring Finisher Serial LF906
—Blaw-Knox Spreader Serial SA3097
—Jaeger Type H Finisher 42X017
—Cleveland Formgrader 084X41
—Model 25 Northwest Crane 6529
—250 Bbl. Butler Cement Bin
—4000 Ft. 9 x 8 Heltzel Form
—1 yard Owens Clamshell Bucket

BALLENGER PAVING CO.
GREENVILLE, S. C. PHONE 2-1845

NEW MADSEN DRYER

6' x 28'—skid mounted with stack, burners, firebox preheater & V-belt drive

L. B. SMITH, INC.
Camp Hill, Pa.

FOR SALE

EUCLID BOTTOM DUMP

1942 18 cyd Struck Capacity, Tractor Model 3LDT, Trailer Model 63-W, powered 6 cyl Cummins Supercharged Diesel, Tractor Drive & Trailer Tires 24:00 x32, 36 ply. $8,500.00.

EQUIPMENT RENTAL SERVICE
213 E. St. Joseph St. Lansing 15, Michigan

FOR SALE

Two Heil Model C12 Scrapers
12 Cu. Yd. Capacity—Condition Good.

Two Gardner Denver Wagon Drills
Condition—One new, one good.

25-Ton Tractor & Trailer
Combination as follows:
Rogers D25D Platform semi-trailer
Mack Diesel Tractor.

All equipment located at White Plains, N. Y.

CIRCLE CONSTRUCTION CORP.
P. O. Box #424, White Plains, N. Y.
Tel. White Plains 9-9000

TRENCHING MACHINES

Parsons Model 21 and Model 25
Excellent Condition

EARLE EQUIPMENT COMPANY
3648 Division Ave., S. Grand Rapids 8, Mich.

FOR SALE

6 Transit Mix Trucks, Macks, Smith—2 yard Mixers

FRAZIER-DAVIS CONSTRUCTION CO.
1319 Macklind Ave. St. Louis, Missouri
or
1 East 43rd Street New York, N. Y.

FOR SALE OR RENT

10" road forms, aggregate batcher bin, cement unloader & batcher bin, Loraine 40 with shovel and backhoe, 34E paver & other items for complete concrete paving outfit.

L. F. COLLIGNON
Davenport, Iowa

FOR SALE

Northwest 225 ¾ yd. crane, ser. #5530, in good condition, 35 ft. boom, fairleads, shovel front, gas engine.....$8,500.00

AMERICAN CONSTRUCTION CO.
RFD 4, Columbia, S. C. *Phone 2-1840*

60% BELOW MFGR'S LIST

BRAND NEW • NAVY SURPLUS

1,000,000 FEET WIRE ROPE

⅜" DIAM. to 2¾" DIAM. Both Black and Galvanized

SALE 60% OFF

WIRE ROPE SOCKET

DIAM. INCHES ⅜ TO 2⅜

SALE 60% OFF

WIRE ROPE THIMBLES

DIAM. INCHES 5/16 TO 1¼

SALE 60% OFF

MANILA ROPE THIMBLE
DIAM. INCHES 1¼—1¾

SALE 60% OFF

CHAIN SHACKLES
SIZES INCHES 1¾ to 2½

SALE 60% OFF

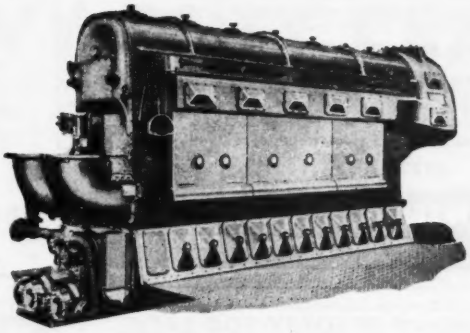
1" x 36" Eye & Eye 1½"x36" Jaw & Eye
1½"x12" Jaw & Eye 1½"x36" Eye & Eye
1½"x18" Eye & Eye 1½"x24" Eye & Eye

ORDER NOW • SEND FOR CATALOG OF ITEMS

J. THOMAS SCOTT INC.
784 S. FRONT STREET
PHILADELPHIA 47, PA.

DIESEL ENGINE-GENERATOR SETS, Diesel Engines all Capacities

ANOTHER ONE OF OUR SPECIALTIES

DIESEL  **POWER**

Anything in Power Plant Equipment

Send for Bulletin 328

Above cut shows our 1600-HP. Fairbanks-Morse OP. Diesel Engine: Several in Stock. Have 1250-KVA., NEW Generators, Shaft Exciters and Switchboards, for Complete Units @ 50% of Today's prices for *IMMEDIATE DELIVERY.*

Several Cooper-Bessemer 600-HP. Diesels also in Stock.

Send Us Your Specifications for Anything in Diesels

Always Get Charles Weaver's prices: Are Money Savers.

TURBINE-GENERATORS We carry one of the Largest Stocks of Turbo-Generators of any firm in the USA. Investigate: Prices Right.

BOILERS: SEVERAL 400# NEW COMBUSTION BOILERS IN STOCK: PRICED TO SELL

Your Cooperation Invited

PHONE WIRE OR WRITE

CHARLES WEAVER

Electrical & Mechanical Engineer

41st Floor, Penobscot Building Detroit 26, Michigan

Telephones:
Woodward 1-1340
" 1-1341
" 1-6038

STEEL BAR JOIST

In Stock for Immediate Shipment

550 Pcs. 8" # 82—16'-8"
200 Pcs. 8" # 82—24'-0"
350 Pcs. 10" #102—18'-8"
200 Pcs. 10" #103—20'-8"
150 Pcs. 16" #167—24'-0"

Also all sizes structural steel in stock.

ACORN IRON & SUPPLY
915 No. Delaware Ave. Philadelphia 23, Pa.
Phone: WAlnut 2-7070

FOR SALE

Two (2) #OB-30 CLEAVER-BROOKS STEAM GENERATORS (Packaged Units)

For # 601L, 15# Design Pressure. Approx. 300 Boiler Horse Power Each. Used for Temporary Heat for Only One Htg. Season at Flushing, N.Y.C. Available in 30 Days. Inspection Welcomed. Consideration Will Be Given to Any Reasonable Offer. For Further Information

Call Mr. R. R. ROTH
Long Island, N. Y. Jamaica 3-3323

FOR SALE
FACTORY NEW BARNES CENTRIFUGAL PUMPS
Sizes 1½" to 6"
and
BARNES SINGLE DIAPHRAGM PUMPS
Immediate Delivery
20% OFF LIST
also
New and Slightly Used Buggymobiles
HODGE & HAMMOND, INC.
1162 Grinnell Place
New York, 59, N. Y.
Dayton 9-5300

NEW and REBUILT
STORAGE BATTERY
LOCOMOTIVES
1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Penna.

FOR SALE OR RENT OR TRADE-IN
LORAIN 1½ cy Diesel Shovel & crane, chain drive, fully rebuilt, excellent condition
LORAIN ½ cy gas shovel, backhoe & crane, fully rebuilt
INSLEY model K ½ cy truck crane 28' boom, on six wheel chassis
1 cy Dragline Bucket
Northwest 25 complete Shovel Front
BENDIX MACHINERY CO., INC.
401 Broadway, New York 13 Tel: Canal 6-5693

DIESEL GENERATOR UNITS

IN STOCK—IMMEDIATE SHIPMENT

2—1420 KVA—FAIRBANKS MORSE—NEW ALTERNATORS DIRECT CONNECTED TO FAIRBANKS MORSE MODEL 38D8 1/8—1600 HP—720 RPM—DIESEL ENGINES.

2—1250 KVA—CROCKER WHEELER—NEW ALTERNATORS DIRECT CONNECTED TO FAIRBANKS MORSE MODEL 38D8 1/8—1600 HP—720 RPM—DIESEL ENGINES.

4—125 KVA—WESTINGHOUSE—3-60-450 VOLT—GENERATORS DIRECT CONNECTED TO GENERAL MOTORS MODEL 3-268A—150 HP—1200 RPM—DIESEL ENGINES.

2—620 KW—240 VOLT—DC GENERAL ELECTRIC GENERATORS DIRECT CONNECTED TO ALCO TYPE 6—12 1/2x13-T—900 HP—700 RPM—DIESEL ENGINES.

2—100 KW—120/240 VOLT—3 WIRE—DELCO GENERATORS DIRECT CONNECTED TO GENERAL MOTORS MODEL 3-268A—150 HP—DIESEL ENGINES.

ENGINES NEW LATE 1944—RELATIVELY FEW HOURS OPERATION

DEPT. A

WALTER H. WILMS & COMPANY

2926 GUARDIAN BUILDING DETROIT 26, MICHIGAN

Phone: Woodward 1-1856 and 1-1857

WINCH TRUCKS

Various Sizes

BUCYRUS ERIE, 1 Yd.
SHOVEL FRONT,
DUMP TRUCKS
TANK TRAILERS
from 1,200 to 4,000 gal.
PICK UP and STAKE
TRUCKS—All Sizes

DICK WALSH

Dealers Truck Sales

1616 W. CERMAK RD.
CHICAGO, 8, ILLINOIS

DON'T BE SORRY TOO LATE!!

BRAND NEW U. S. A. PRESSURE TYPE

CO_2 FIRE EXTINGUISHER

APPROVED BY U. S. GOVERNMENT

Protect your motorized equipment, tool sheds, work camps, and even your own home and garage. Kills flash fires instantly. Tank is 14" x 3 1/2" can be used more than once. Charged—refillable, good until used, weighs 12 pounds.

REGULAR $21.50 VALUE

$9.75

2 for $19.00
6 for $55.00
Shipped F.O.B. Phila.

Will Ship Rated Firms Open Account. Others Send Check.

J. JACOB SHANNON & CO.

214 N. 22nd St., Phila. 3, Pa.

THE OLDEST EQUIP. HOUSE IN PHILA.

BOILERS

10 to 1000 H. P.

NEW-USED
RECONDITIONED

Steam, Gas and Electric Power Equipment

J. PARKER THOMPSON CO., INC.
507 FIFTH AVE., NEW YORK CITY
MURRAY HILL 7-6547-8-9

150 CRANES

CRAWLERS — CRUISERS — TRUCKS

LORAINS - LINKBELT SPEEDERS - P & H
BYERS - NORTHWEST - BAY CITY
OSGOODS - MARIONS - BUCKEYES
INSLEYS - UNITS - HANSON
QUICKWAYS - OLIVERS

As Is.

1/2 Yard, $2,500.00 to $3,500.00
3/4 Yard, $3,500.00 Up —

ELLIS-NOVACK CO.

1925 N. BUENA VISTA BURBANK, CALIF.

Phone Charleston 8-1641

FOR SALE: ONE WORTHINGTON, SINGLE HORIZONTAL TANDEM THREE STAGE AIR COMPRESSOR

Serial No. L-43438. Purchased 1941. Size 10/6—1/4/2—3/4 x 11. Equipped with lubrication and air filter. First stage 100 psi. Second stage 350 psi. Third stage 1200 psi. Price $5500.00 FOB Barberton Plant loaded on flat cars. Condition good. No performance or other guarantee. For inspection contact purchasing dept.,

PITTSBURGH PLATE GLASS CO.
Columbia Chemical Division, Barberton, Ohio

1940—1/2 yd. Michigan Truck crane also shovel attachment

Model T.M.C.T. 16 10 Wheel Tandem

T. LANDI & SONS
87 Spring St. Morristown, N. J.
Phones—Morr. 4-3036 day—Morr. 4-3478 night

FOR SALE

NORTHWEST, Model 20, Shovel-Dragline, 1/2 yd. Like New.
KOEHRING, Model 301, Shovel-Dragline, 3/4 yd. New Motor.

2—NORTHWEST MODEL 25
REPAIR PARTS—MODEL 25
SPROCKETS—CRAWLER BASE
CHAIN—ROLLERS—BUSHINGS, ETC.

DONALD B. MacNEAL

121st and Loomis St., Chicago 43, Ill.
Telephones: PULman 53411—TRIangle 41236

FOR SALE

Double Drum Skagit Gase. Hoist, Model BU-140
Capacity 49000# @ 57 F.P.M.
233000# @ 12 F.P.M.

ABERTHAW COMPANY

133 Southampton St. Boston 18, Mass.
Phone Highlands 5-6700

FOR SALE

STEEL BUILDING

230' long by 70' wide, crane runway 25'-7" high for 10 ton crane (but no crane), to be moved from present location. Building is in excellent condition.

W. J. DUNN CO., INC.
524 C St. Liberty 2-2507 Boston 10, Mass.

FOR SALE

BULLDOZER: Caterpillar D7, diesel with LeTourneau cable controlled blade.

COMPRESSORS: Two Chicago Pneumatic, 210 cu. ft. with Caterpillar 7700 diesel engines. Mounted. Pneumatic tires. Bulldozers and compressors like new. Low price.

O. C. EVANS, Mt. Sterling, Ky.

LOWBED TRAILERS

Used 15 and 20 ton Rogers and 23 ton LeCrosse trailers.

C. C. KEESLER

1515 Lincoln Ave. Prospect Park, Pa.
Phone Ridley Park 1606 or 2817R

LIQUIDATION SALE . . .

OF ENGINEERS' SUB-DEPOT 14

HEAVY DUTY CRANES:

1½-Cu. Yd.	"Marion" Crawler Crane with Buda Diesel Engine	$15,000.00
1½-Cu. Yd.	"Linkbelt" Crawler Crane with Hercules Diesel Engine	$15,000.00
1½-Cu. Yd.	"Osgood" Crawler Crane with Waukesha Gas Engine	$12,000.00
	Can be equipped with D-13000 Caterpillar Diesel Engine for an additional amount of	$ 5,000.00
1¼-Cu. Yd.	"Manitowoc" Crawler Crane with Hercules Diesel Engine	$12,500.00

• ***All Prices are f.o.b. Manila. All equipment in good running condition with C. B. Nelson certificate. Delivery within 15 days upon receipt of order and irrevocable letter of credit.***

MISCELLANEOUS:
⅜–½–Cu. Yd. Cranes, Crawler and Truck-Mounted
¾–Cu. Yd. Cranes, Crawler and Truck-Mounted
PRICES AS IS AND WHERE IS FROM $800.00 to $1,500.00. EXPENSES TO BOAT, ABOUT $500.00.

REYES ENTERPRISES, INC.

(REYEN, INC.)

San Luis, Corner General Luna
Manila, Philippines
Tel. No. 3-21-86

STRUCTURAL STEEL

All sizes in stock

I-Beams and Girders
Angle irons—Channels,
Columns.

Reinforcing Rods
Roof Trusses and Buildings.

We design, fabricate and erect.

ACORN IRON & SUPPLY CO.
915 No. Delaware Ave., Philadelphia 23, Pa.
Phone: WAlnut 2-7070

FOR SALE

NORTHWEST SHOVELS

MODELS 80D, 6 & 25
LATE MODELS IN EXCELLENT CONDITION
WILLIAMS CONSTRUCTION COMPANY
Box 145, Middle River, Baltimore 20, Md.

FOR SALE

One Lorain 75 shovel—1¼ yd. bucket, Serial #4039—$8500.00
Six Bulldog Mack Dump Trucks, AC & AK, with 20 yd. bodies, heil hoists & pneu. tires—each $600.00
Inspection at
MICHAEL KERO
619 Schuyler Ave. Lyndhurst, N. J.

TURBO-GENERATORS

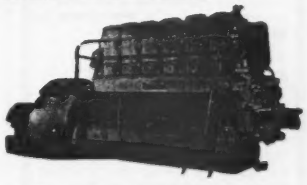
200 KW. TO 5000 KW.
NEW-USED
RECONDITIONED

J. PARKER THOMPSON CO., INC.
307 FIFTH AVE., NEW YORK 17, N. Y.
MURRAY HILL 7-6547

NEW ENTERPRISE DIESELS

450 HP 450 RPM DSG-6

375 KVA 300 KW AC STD VOLTAGES



Your Inquiries Will Receive Prompt Attention

Qu.	HP	Model	RPM	KVA	KW	GEN.	Ph	Cycle	Volts
2	1600	General Motors 16-278A	720	1250	1250	General Elec.	3	60	2300
2	1600	General Motors 16-278A	720	1250	1000	Elliott	3	60	2400/4160
*1	500	Fairbanks Morse Type Y	257	415	415	Fairbanks Morse	3	60	2400
**3	450	Enterprise DSG-6	450	....	250	Elliott	..	DC	120/240
1	385	Ingersoll Rand "S"	600	....	250	General Elec DC	..	..	250
2	225	Ingersoll Rand "S"	514	....	150	General Elec. DC	..	..	230
**2	240/200	Buckeye Model 180	600/500	200/166	160/133	Burke	3	60/50	240-480/230-460
**3	125	General Motors 6016-E	1200/1000	75/62.5	60/50	General Elec.	3	60-50	127/220-230/400
1	100	International UD-18	1200	62.5	50	Westinghouse	3	60	240
2	90	General Motors 6-71	1200	.....	60 KW	Delco DC	..	..	120/240
**2	52	International UD-14	1200/1000	37.5/32.5	30/25	Elec. Mchnry.	3	60/50	127/220-230/400
**8	36/30	International UD-9	1200/1000	23/18.75	18.75/15	Elec. Mchnry.	3	60/50	240/440/127-220
1	79	Caterpillar D4600	1200	37.5	30	Ideal	3	60	220

One plant Consisting of Three Units, i.e. 65, 150, and 200 KW. **New units (all other units used).

Diesel Motors

PORT WASHINGTON, L. I., N. Y. ***CORPORATION*** **TEL: PORT WASHINGTON 2000**

ALL KINDS OF USED EQUIPMENT

THE DATE

Thursday, March 31, 1949

THE PLACE

"FABICK'S" at Sikeston, Mo.

Bidding starts at 10:00 A. M.

AUCTION WILL BE HELD RAIN OR SHINE!

EVERYONE INVITED

Values for all types of equipment owners go on the block! There'll be bargain buys for contractors — farmers — sand and gravel producers — sawmill operators — cotton gin owners — lumbermen — landscape engineers — factory owners — oil men — city and county purchasing agents — builders — industrial power users — miners — any user of construction or agricultural equipment.

BARGAINS FOR SALE

Air Compressors — Bulldozers, cable and hydraulic — Cable — Chain Saws — Concrete Mixers — Cranes — Diesel Engines — Disks — Draglines — Electric Motors — Electric Sets — Gravel Plants — Hammermills — Jackhammers — MotoCranes — Motor Graders — Mowers — Rock Crushers — Rollers — Scrapers — Shovels — Tractors, wheel and crawler — Traxcavators — Wagon Drills — Wagons — Winches plus scores of other equipment values!

FABICK

ALL ROADS LEAD TO SIKESTON, MO., MARCH 31st

MICHIGAN TRUCK CRANE

Model TLDT-20. New in 1946. Capacity 12 ton. Equipped with Kohler light plant, 60' boom and 15' jib oversize tires. Extra counterweight. Located Gary, Indiana. Excellent condition. Will sell or rent.

Owen Type "M" 1¼ Yard Digging Clamshell Bucket, weight 4500#. Used on one job. Wonderful condition. Priced to sell

50% OFF

Unused Hendrix Dragline Bucket Parts, lips, teeth, chains, pins, sheaves, etc. For all size buckets. Send for complete list. Address Box #

FS-8334, Engineering News-Record
520 North Michigan Ave., Chicago 11, Ill.

FOR SALE
USED STRUCTURAL STEEL BUILDINGS—OVERHEAD ELECTRIC TRAVELING CRANES
BENKERT STEEL & SUPPLY CO.
2017 Preble Ave. Pittsburgh, Pa.

FOR SALE OR RENT
LORAIN MC-4 MOTOR CRANE
80' Boom 15' Jib
LORAIN 40 DIESEL CRAWLER
Crane, Dragline, Shovel, Backhoe
TD 14 INTERNATIONAL TRACTOR
Equipped with Bucyrus-Erie Bulldozer. Serial TDF 21980.
STANLEY J. ZIOBRO, Inc.
39 Lackawanna Plaza Bloomfield, N. J.
Bloomfield 2-0732

---

2 INTERNATIONAL 6 x 6—4 YD. MIX TRUCKS—$5,000.00 EACH
1 G.M.C. 3 YARD REX MIX TRUCK—$3,750.00
Great Neck Corporation
541 Bayview Ave., Manhasset, N. Y.

NEARLY NEW
900 BARREL JOHNSON TWIN SILO BULK CEMENT PLANT
PRICE $5500
JUTTON-KELLY CO.
13240 Alber Ave. Dearborn, Michigan

TIMKEN STEELS — ⅓ PRICE
New 8 foot by 1 inch hollow hexagon standard threaded and shanked rock drill steels in original boxes. List price $8.10 each, my price $2.94 each. Minimum order 36 steels.
R. BAGGALEY
515 So. Aiken Ave. Pittsburgh 6, Pa.
Phone: Schenley 7000

WANTED

WANT TO BUY *NEW SURPLUS*
VALVES & PIPE FITTINGS
EAST COAST VALVE & FITTING CO., INC.
725 FIFTH AVE. BROOKLYN 32, N. Y.

Compressors Wanted
STATIONARY - PORTABLE
LARGE OR SMALL
L. W. BAUER
22 Burnett Street Bloomfield, N. J.

WANTED
2¼ yd. Clam Shell Bucket
⅜ yd. Backhoe for Bay City Model 30
35 ft. Lattice Boom for Northwest Model 25
"STONE THE CRANE MAN"
415 Brainard Ave. *Temple 1-2515* Detroit 1, Mich.

NEW and USED
STRUCTURAL STEEL
Steel Tanks — Pipe and Fittings
Bridges and Structures
Machinery and Equipment
ACORN IRON AND SUPPLY CO.
915 No. Delaware Ave. Philadelphia 23, Pa.
Phone: WAlnut 2-7070

WANTED
CRAWLER STEAM CRANE
50' to 60' Boom with Approx. 65 H.P. Boiler 125# Pressure
W-8222, Engineering News-Record
330 West 42nd Street, New York 18, N. Y.

WANTED TO RENT OR BUY
Derrick Car or Locomotive Crane from 15 to 40 tons—standard gauge—maximum height 12' 8"—width 10' 0" for tunnel clearance.
PEERLESS CONSTRUCTION COMPANY
280 Madison Avenue, New York City
Murray Hill — 6-4754

WANTED
Shovel Boom complete with Boom Dipper Stick and Dipper for Thew-Lorain Model 69 Shovel.
Mail or wire full particulars to
SHERIDAN EQUIPMENT CO., Ltd.
33 Laird Dr. N., Toronto 17, Ontario

WANTED:
½ yd. Backhoe for 515 Unit Shovel
⅜ yd. Backhoe for Hanson Model 65
Low Bed Trailer 20 to 40 Ton
FOR SALE:
1 Fruehauf Pole Trailer (Telescope 20 to 40 ft) Air Brakes
2 30 ft Trailer chassis, air, 12:00 Tire, 25 Ton, Unused
1 Cletrac Tractor, gas, Wis. Motor, 12 Volt Starter
W-8313, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

BECAUSE OF ILL HEALTH,

I am forced to sell the following:

THREE "CATERPILLAR" DW10 TRACTORS

Serial Nos. 1V130, 1V176, 1V126

THREE "CATERPILLAR" NO. 10 SCRAPERS

Serial Nos. 3C1022, 3C1026, 3C1031

Equipment has been used approximately 1200 hours.

CONTACT AT ONCE:

WILLIAM N. HANDLEY
Contractor
Richmond, Missouri

FOR SALE BY OWNER—
Located in Kansas and Oklahoma

3—Super C Tournapulls (less than 1,000 hours)
1—New D-8 Push Cat, power unit (500 hours)
$55,000.00 complete outfit
3—Super C Tournapulls (A-1 Condition)
1—C Tournapull
1—D-8 Push Cat, power unit
$40,000.00 complete outfit
8—7 yd. Koehring Trail Dumps (Motors & Transmission overhauled)
$2,750.00 each
1—1¾ yd. Osgood Chief Combination Shovel & Dragline (Good Condition)
$15,000.00
1—1 ¾ yd. Thew Lorain 75 (Good condition)
$7,000.00
1—½ yd. 1947 P.H. Backhoe (A-1 Condition)
$7,500.00
2—315 Schram Air Compressors Diesel, on rubber
$4,000.00 each
15—Tractors and Scrapers
1—80-D Northwest Shovel with 55 ft. Crane Boom, has moved only 125,000 yards
5—11 yard White Tandem Dump Trucks (Now being re-conditioned). Will sell all together lump sum of **$65,000.00**

FS-8339, Engineering News-Record
520 North Michigan Ave., Chicago 11, Ill.

BARGAINS FOR SALE

100 KW. Diesel Engine Generator Sets

11—100 KW., 250/275 V. D.C. Delco Generators dir. con. to 150 HP., Model GBD-8, 5½x7, 8 cyl. Superior Diesel Engines, elec. starting with muffler, power panel and accessories.

1—100KW., same as above with 220 or 440 V., New A.C. Generators.

2—37½ KVA. 220/440 V. 3 ph. 60 cy. Buda Lanova Diesel.

3—25 KVA. West 1 ph. or 3 ph. Al Le Roi Gasoline.

PRACTICALLY AS GOOD AS NEW
ONLY USED FOR SPARES

AIR COMPRESSOR

6—240 CFM Westinghouse type 3 VS-23 3 cyl. vert., 150 lbs. pres. dir. con., to 50 HP., 220/440 or 2200 v. 3 ph. 60 cy. West Slip Ring Motors, auto. control. Can furnish D.C. Motors or Oil or Gasoline Engines if desired.

PORTABLE COMPRESSOR

1—315 CFM Ingersoll Rand portable 100 lb. pres. driven by 105 HP Waukesha Oil Engines, 860 rpm.

BRAND NEW TURBO SET

Westinghouse Steam Turbine consisting of 200 kw., 220/440 v., 3 ph. 60 cy. 1200 rpm., 80% P.F. A.C. Generator—40 kw., 120 v. 1200 rpm., D.C. Exciter and Westinghouse Reduction Gear.—Non-condensing.

HOISTS or WINCHES

200—1½ Ton HAND CRANKED ratio 27:1 thru an enclosed double reduction gear unit with 4 planetary gears mounted on steel plate complete with 48' of ¼" cable, ratchet type brake, push button release.

FREQUENCY CHANGERS

1—25 kw., 220/440 v. 3 ph. 180 cy., G.E. dir. con. to 25 HP., 1800 rpm., 220/440 v. 3 ph. 60 cy. motors.

SYNCHRONOUS MOTORS

1—New 500 HP., Elec. Machy. Co. 2200/220 or 440 v. 120 rpm.

MOTOR GENERATOR SETS—
250 V. D.C.

Motors 220/440 volt or 2200 volt 3 phase, 60 cycle

No.		KW	Make	RPM
3		250	Westinghouse	1200
1		200	Westinghouse	720
2		200	Westinghouse	1200
1		100	Westinghouse	700
1		100	General Electric	900
1		100	Westinghouse	600
1		100	General Electric	1800
1		100	Reliance	580
1		100	Delco	1200
2		90	Westinghouse	680
4		75	Westinghouse	720
1		75	Westinghouse	1200
1		60	Westinghouse	1200
1	NEW	50	General Electric	1800
3		40	Westinghouse	900
2		30	Westinghouse	720

WRITE, WIRE OR PHONE YOUR ELECTRIC NEEDS—
SEND FOR STOCK LIST. LIST YOUR IDLE EQUIPMENT WITH US

Duquesne Electric & Mfg. Co.
PITTSBURGH 6, PA.

DIESEL-GENERATORS

5 KW. TO 1000 KW.
NEW-USED
RECONDITIONED

J. PARKER THOMPSON CO., INC.
507 FIFTH AVE., NEW YORK 17, N. Y.
MURRAY HILL 7-6547

FOR SALE

50-B—Bucyrus-Erie PILE DRIVER

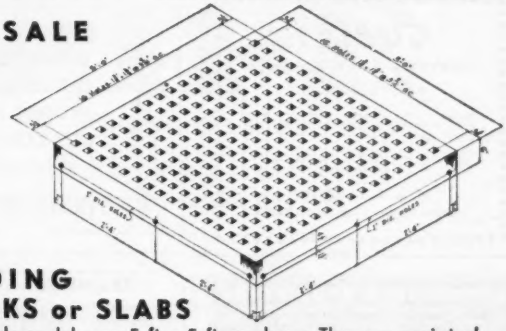
50-B, Bucyrus-Erie, crawler, oil burner, complete with 50-C Super-Vulcan Pile Hammer purchased new recently. 75 ft. sectional boom and leads with telescopic struc for driving batter piles, also purchased new recently. Machine also equipped with shovel, dragline, clamshell attachments.

Latest model machine with cast-steel rotating base and crawler truck frame.

Available immediately.

CHARLES L. VENICE
P. O. Box 5027 Ancon, Canal Zone

FOR SALE



BENDING BLOCKS or SLABS

These blocks or slabs are 5 ft. x 5 ft. as shown. They are semi-steel, in good condition, having only been slightly used on a war-time contract in a shipyard. They are very useful for many purposes, such as for bending table, for layout & assembly work, etc. We also have stands for single blocks, and multiple stands to carry 2, 4, or 8 blocks. We can sell the blocks with or without the stands.

Orders accepted for single blocks or large quantities, as desired.
Write, Phone or Wire at Once!

ACORN IRON & SUPPLY CO.
915 No. Delaware Ave.
Philadelphia 23, Pa.
Phone: WAlnut 2-7070

SURVEYING INSTRUMENTS

USED • REBUILT • SALE • RENT • REPAIRING

Our Craftsmen do

INSTRUMENT REPAIR AND OVERHAUL

- Complete department—handles all makes.
- Experienced craftsmen do all work.
- Includes thorough overhaul, cleaning, oiling and adjustment.
- Precision work guaranteed.

DAVID WHITE COMPANY
317 W. Court St. • Milwaukee 12, Wis.

FROM STOCK
Brand New & Rebuilt

TRANSITS & LEVELS

Fully equipped modern shop—all makes and models repaired — all work guaranteed — instruments rented

Midwest Representative: W. & L. E. Gurley

NATIONAL BLUE PRINT CO.
Established 1914.
210 S. Canal St. Chicago (6), Ill.

RE-BUILT REPAIR RENT REAL EXPERTS

BUFF

ALL MAKES

69 Day St., New York

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in trade. A complete line of Engineering Instruments and Equipment for field or office. Write for catalog N.R.-93

WARREN-KNIGHT CO.
Manufacturers of Sterling Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

TRANSITS and LEVELS

Immediate delivery on expertly rebuilt, well-known makes. All makes of instruments repaired. Work guaranteed

Write for used instrument list today

J. H. WEIL & CO.
1325 CHERRY ST. PHILADELPHIA, PA.
GURLEY REPRESENTATIVES

GURLEY
SURVEYING INSTRUMENTS
NEW • REBUILT

Replace your platinum wire or spider web reticle with the exclusive new Gurley glass reticle.

Patterns to suit every surveying need.

W. & L. E. GURLEY
Union Plaza, Troy, New York

★TRANSITS
LEVELS
REBUILT BY
QUALIFIED EXPERTS
PROMPT SERVICE
GUARANTEED WORK
(BUFF and BUFF AGENTS)

INSTRUMENT SALES
325 W. Huron St. Chicago 10, Ill.

SPECIALIZED REBUILDING
of surveying and engineering instruments. All makes and models expertly repaired in modern shop. All work guaranteed.

USED REBUILT INSTRUMENTS
for sale or trade

ROY D. HICKERSON
46 JOHNSON AVE. INDIANAPOLIS 19, IND.

TRANSITS LEVELS

Rebuilt Repaired All Makes

BRUNSON

Rented Bought Sold

- Patented Ball Bearing Base installed on any instrument gives "Longer Lasting Accuracy."

BRUNSON INSTRUMENT CO., INC.
1405 Walnut St., Kansas City, Mo.

SURVEYING INSTRUMENT REPAIRS
ALL MAKES
ECONOMICAL - EFFICIENT SERVICE
Agent for David White Company
THE GRAF-APSCO COMPANY
5868 Broadway Chicago 40, Ill.

If there is anything you want that other readers can supply

OR . . . something you don't want— that other readers can use—

Advertise it in the
SEARCHLIGHT SECTION

FOR SALE

COAL HAULERS

3—Part Model 120 Coal Haulers With 25 Ton Austin Western Trailers

ALSO

315 Ingersoll Rand Diesel Air Compressor
Barber Green Loader, Model 552, #12
Caterpillar Motor Grader

REID-HOLCOMB CO. INC.
1813 Kentucky Ave. LI. 2346
INDIANAPOLIS 21, IND.

FOR SALE

Electric Motors 75 H.P. up
Controls—Transformers
PUMPS
Vacuum units
Wellpoint dewatering systems

Since 1922

WM. W. LEE & SON
20 E. Jackson Blvd.
Chicago 4, Illinois
Phones: Harrison 7-7592, 7-1720

GENUINE BURLAP SAND BAGS

With the string at top.

Suitable for barricading, bulkheading, flood control, fire control and shipping.

ACORN BAG AND BURLAP CO.
915 No. Delaware Ave. Philadelphia 23, Pa.
Phone: WAlnut 2-7070

FOR SALE

1 Lorain shovel 80, purchased Jan. 1948
1 Manitowoc model 3000B, new 1948 2 Yd. shovel with D-17000 caterpillar engine.
2 End dump trucks model 49FD, purchased new 1948.

FS 7844, Engineering News-Record
330 West 42nd St., N. Y. 18, N. Y.

FOR SALE

P&H MODEL 250—

1939 with 80' Boom & 30' Jib, Mott Haven Mounting with 6-BQ Mack Motor. Excellent Condition. Price $15,000.00.

LEE CRANE SERVICE INC.
33 Island St., Boston 19, Mass.

PIPE

(Additional Pipe advertising on opposite page)

Cast Iron B & S
PIPE and FITTINGS
STEEL PIPE and VALVES

ACORN IRON AND SUPPLY CO.
915 No. Delaware Ave., Philadelphia 23, Pa.
Phone: WAlnut 2-7070

PIPE

If It's Made — Ask ALBERT!

DISTRIBUTORS FOR

• PIPE
Steel (all types)
Wrought Iron
Cast Iron
SPEED-LAY Pipe Systems

• VALVES
Reading Pratt & Cady
O.I.C. Forged
Cooper Alloy All Stainless
Steel—Brass—Iron
Special Alloys

• FITTINGS
Tube-Turn Welding Fittings
Tube-Turn Forged Steel Flanges
Grabler Screwed Fittings
Dresser Couplings
Victaulic Couplings

• PILING
ARMCO
Youngstown
Pile Points
Cobi Pile Tips

IF IT'S PREFABRICATED — ASK ALBERT

Our shops are equipped to cut, bend, coil, weld, bevel, thread and test to your most minute requirements. Experienced men make your layouts and consult with your engineers. Experienced men do the fabrication and behind it all you have ALBERT'S years of efficient service.

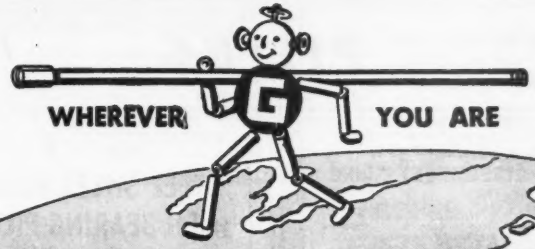
ALBERT PIPE SUPPLY CO., Inc.
No. 13th & Berry Streets, Brooklyn, N. Y. EVergreen 7-8100

FOR SALE
IMMEDIATE DELIVERY
Cast Iron Water Pipe & Fittings
150 - lb. pressure—B&S A.W.W.A. STANDARD
NEW PIPE—4-inch 10-inch
—6-inch 12-inch
—8-inch
RECONDITIONED—12-inch
16-inch
20-inch
24-inch
VALVES—All sizes—New and Reconditioned.
FLANGED PIPE— 6-inch New
8-inch New
10-inch New
12-inch, Reconditioned
14-inch Reconditioned
C.I. WATER PIPE FITTINGS—All kinds and sizes.
SOIL PIPE—from 2 inch to 15 inch and Fittings. Immediate delivery
TAGCO, INC.
111 Front St. Hempstead, L. I., N. Y.
Hempstead 2-5535-5857

STEEL PIPE
1300 ft.—5½" with couplings
Located Chicago.
Invite rigid inspection
DONALD B. MAC NEAL, Inc.
12100 S. Loomis St. Chicago 43, Ill.
Pullman 5-3411

6" STD. LINE PIPE
40,000 ft. 6⅝" O.D., 18.97# Seamless, 40 ft. random lengths, ends beveled for welding, used, good condition. Located near East St. Louis, Ill.
HORWITZ PIPE & STEEL CO.
Ph. 2-9128 Tulsa, Okla.

WROUGHT Steel Pipe
FITTINGS
VALVES
BOILER
TUBES
ALBERT & DAVIDSON PIPE CORPORATION
2nd AVENUE, 50th-51st STREET
BROOKLYN 32, N. Y.
Windsor 9-6300



PROMPT DELIVERY TO CUT YOUR COSTS

PIPE

ALL SIZES CUT AND THREADED TO SPECIFICATION

VALVES AND FITTINGS
NEW—USED

STEEL—WROUGHT IRON—CAST IRON—
CULVERT—SPIRAL WELDED—STRUCTURAL

FLANGED—SCREWED—WELDING FITTINGS

IRON BODY—BRASS—STEEL VALVES

GREENPOINT IRON & PIPE CO., INC.
BOGART AND STAGG STREETS
Phone EVergreen 6-7200 Brooklyn 6, N. Y.

RAILS—TIES
TRACK ACCESSORIES

EVERYTHING FOR THE TRACK FROM
SWITCH TO BUMPER

R. R. TIE PLATES
Excellent Relay
100,000 6½" x 9½" for use with 70# to 80# Rails
50,000 7½" x 10½ for use with 85# to 115# Rails

MORRISON RAILWAY SUPPLY CORP.
RAND BLDG. BUFFALO 3, N. Y. EMPIRE BLDG. BIRMINGHAM 3, ALA.

NEW—RAILS—Relayers
All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.
M. K. FRANK
480 Lexington Ave. New York, N. Y. Reno, Nevada
Park Bldg. Pittsburgh, Pa. Carnegie, Pa.

RAIL
STEEL PLATE
STRUCTURALS, PIPE,
TUBING, WIRE ROPE,
FERROUS AND NON-FERROUS SCRAP
BOUGHT-SOLD LIQUIDATED
DULIEN STEEL PRODUCTS, Inc.
of Washington
9265 E. Marginal Way • Seattle 8, Wash. • LAnder 6000

RAILS
New & Relay
Track Accessories - Steel Storage Tanks
W. H. DYER CO. INC.
1859-X Railway Exchange Bldg.
St. Louis 1 Mo.

STEEL CONCRETE TOWER
Steel Concrete Tower in 10'9" Sections with Tower Hoppers, Tower Buckets, Catheads and Braces, 1 cu. yd. capacity.
ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.

New and Relaying
RAILS and ACCESSORIES
Motor Gang and Maintenance Cars
ACORN IRON AND SUPPLY CO.
915 No. Delaware Ave. Philadelphia 23, Pa.
Phone: WAlnut 2-7070

EVERY ISSUE
EVERY WEEK
Advertising of USED and Surplus New Construction Equipment is now accepted for all issues in the
SEARCHLIGHT SECTION of ENGINEERING NEWS-RECORD

FOR SALE
Steam Locomotive Crane
1—40 Ton, 60' Boom, 60" Mass standard & A.S.M.E. Boiler, Serial #3671. Mfd. by The McMyler Division of the Industrial Brownhoist Corp. Price $9200.00
Located near Boston, Mass.
HARLAND G. RICE, INC.
880 River Road Edgewater, N. J.

PILING

We do a Nation-Wide business in
USED **STEEL SHEET PILING** NEW
RENTED BOUGHT
700 pcs. 27-32 ft. Beth. ZP32—Texas
80 pcs. 70 ft. Beth. DP2—Illinois
170 pcs. 50-60-65 ft. Carn. M112—Missouri
90 pcs. 50 ft. Carn. M116—Alabama
1300 pcs. 20-50 ft. Beth. SP-4—Georgia
Other lengths & sections at various locations
Nos. 0, 1, 2 Vulcan Pile Hammers and Driving Rigs
No. 7 9B3, 10B3, 11B3 McKiernan pile hammers
Nos. 400 and 800 Vulcan Pile Extractors
50-C and 80-C Super Vulcan Pile Hammers
All sizes Pile Hammers & Extractors for Rent
Regardless of location of your job, wire or write
MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., St. Louis, Mo.
"WE BUY STEEL PILING FOR CASH"

FOR SALE
STEEL SHEET PILING and H-BEARING PILING
Large quantity of "Z" and M-115 Steel Sheet Piling, new and used, together with large tonnage of H-Beams and Bearing Piling for immediate sale.
Owned and offered by General Contractor.
R. M. LUFF
c/o City Waterworks Plant
Douglasdale Road Richmond, Virginia

FOR SALE
Model 65 Byers ½ yd. back-hoe and drag-line combination 35' boom, bucket, Buda power, all in excellent condition. Location Arlington, Va. Price $5250.00.
Write, Wire or Phone.
H. C. LAWRENCE, Kitty Hawk, N. C.

FOR SALE One Fordson Loader, One D-7 with angledozer, One Osgood Combination Crane & Shovel, One AC Model L Tractor with Baker Blade.
FS-8314, Engineering News-Record
330 West 42nd Street, New York 18, N. Y.

FOR RENT
STEEL SHEET PILING
CANDLER AND BASS
Birmingham Theatre Bldg.
Birmingham, Mich.

New And Used
PILING
STRUCTURAL STEEL
ACORN IRON AND SUPPLY CO.
915 No. Delaware Ave. Philadelphia 23, Pa.
Phone: WAlnut 2-7070

Caterpillar D8ZU352 Bare Tractor like new
Caterpillar 12 Patrol 6T—100 HP., also 7T.
Caterpillar D7 Traxavator
2 Allis Chalmers Bare Tractors HD19s
LUKE MILLER
335 Southwest Boulevard
Victor 6312
Kansas City, Missouri

WANT BUY
ALL SECTIONS
STEEL SHEET PILING
DARIEN CORP.
60 E. 42nd St. N. Y. 17, N. Y.

Watch—
the *Searchlight Section*
for
Equipment Opportunities

FOR SALE
No. 5 Industrial BROWNHOIST
gasoline operated 8 wheel locomotive crane, full steel cab, 50 ft. boom, 25 ton capacity with 1½ yard 2 line clamshell bucket. Unit new 1932. New engine installed 1941. Now in operation. Phone for further details.
WIGGLESWORTH MACHINERY CO.
199 Bent St., Cambridge — KI 7-5242

RENTAL ➡ STEEL SHEET PILING ⬅ *New and Used*
Large Stocks Available at Warehouses & Field Locations
PILE HAMMERS AND EXTRACTORS FOR RENT
L. B. FOSTER CO. NEW YORK PITTSBURGH SAN FRANCISCO HOUSTON CHICAGO
ADDRESS THE FOSTER OFFICE NEAREST YOU

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.00 a line an insertion.

INFORMATION.
BOX NUMBERS care publication New York, Chicago or San Francisco offices count as 1 line additional in undisplayed ads.
DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:
The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS received by March 23rd appear in March 31st issue subject to limitations of space available.

ENGINEERS
SANITARY AND STRUCTURAL

Excellent opportunities for immediate permanent employment with a progressive organization. Experience essential in sanitary and/or structural design, specification writing and report preparation for water and sewage treatment plants. Engineers experienced in valuation and rate studies also needed.

Desirable working conditions at salary commensurate with ability. Write for application blank. All replies will be held confidential and will be promptly acknowledged.

CAPITOL ENGINEERING CORPORATION
DILLSBURG, YORK COUNTY PENNSYLVANIA

Engineering Designers

Several men for layout of Conveyor Equipment for handling heavy bulk material such as ore, coal, coke and stone for Steel Plant installations. Should have broad experience in the design of Belt Conveyors, Hoppers and Chutes and also layout knowledge of enclosing building and gallery requirements.

Write for application form or give complete information of your past experience, including compensation earned and expected.

ARTHUR G. McKEE & CO.
2300 Chester Ave.
CLEVELAND, 1, OHIO

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED—ENGINEERS, Architects, Draftsmen experienced in the design of sewers, sewage treatment plants, water treatment plants and industrial buildings. Also engineers to supervise construction. State qualifications, experience, salary requirements and date available. P-1155, Engineering News-Record.

STRUCTURAL DETAILERS—Checkers. Paid holidays. Vacation. Ralph Rinker, 572 Bellevue Ave., Trenton 8, New Jersey.

WANTED MECHANIC familiar with all types of heavy road equipment, batch plant setups, must have own tools. Good proposition. Will go anywhere in New York state. P 8211, Engineering News-Record.

WANTED, SEVERAL engineering graduates, under 35, by large industrial fire prevention organization maintained by leading insurance group. Permanent position. Periodic inspections and special consulting service for leading industrial plants. Thorough training. P 8063, Engineering News-Record.

WANTED—GENERAL Construction Superintendent on a large housing project. Must be good organizer and capable of assuming full responsibility of the actual construction as well as the coordination of all subcontracted trades. P 8102, Engineering News-Record.

SUPERINTENDENTS AND high-class Foreman for concrete bridge work, pile driving and earthwork, by a well established company in the northeastern area. Steady work and advancement to the right men. P 8117, Engineering News-Record.

WELL ESTABLISHED retail firm has position open for structural engineer between the ages of 30 and 40 who is familiar with concrete structures. College degree in engineering and at least five years field experience or experience with structural engineering firm required. Applicant must be capable of supervising construction and experienced in designing and detailing of concrete. Must be free to travel, headquarters in Atlanta, Southeastern resident preferred but not required. Give full details of educational and business history in letter of application. P 8130, Engineering News-Record.

WANTED — ENGINEER-Superintendent for General Contractor, operating in Mich., near Detroit. Sewer, water and conduit lines. Must be able to estimate. Please state age, experience and salary expected. P 8184, Engineering News-Record.

WANTED—YOUNG engineer for quantity record and survey work for contractor on California Central Valley Canal construction. P 8244, Engineering News-Record.

(Continued on page 378)

CONSTRUCTION EXECUTIVE

Reputable Building Organization, location New York, seeks services of experienced man as Assistant to the President. Background must definitely indicate knowledge of estimating, purchasing, general supervision, and administrative ability. College degree desirable, but not essential. Age limit, 45 years. Reply in full confidence, giving complete details and earning ability for past five years. Enclose snapshot, not returnable.

P-8229, Engineering News-Record
330 West 42nd St., N. Y. 18, N. Y.

Large insurance company has opening for

ENGINEERING CONSULTANT

in connection with its Mortgage Loan and Real Estate Department. Must have knowledge and experience in construction of commercial buildings and be conversant with costs and appraisal methods. Give complete details including education, experience, salary, age and photo. Reply

P-8197, Engineering News-Record
330 West 42nd Street, New York 18, N. Y.

WANTED
Civil Engineer or Supervising Contractor

To close and contract licenses with installers, contractors and applicators of special rubberized bituminous materials in great demand for buildings, roads, sewage disposal plants, etc.

Patents have been granted; grantee has pioneered in the construction field for over 30 years.

Commissions on sales either through your own specifications or effort, or dealer sales will be paid in the territory. Commissions remunerative and continuous. State territory you can cover; also do you specify materials on certain construction work.

RUBBERIZED OIL PLASTICS CO.
(Not Inc.)
6049 W. 65th St. Chicago 38, Ill.

WANTED
Young Engineer—Under 40
with practical experience in construction and estimating cost of work for position with contracting company in central and eastern states. Write full information concerning qualifications, experience, previous salaries, and yearly compensation expected. Include photograph if available.

P-8186, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

AIR CONDITIONING ENGINEER

Thoroughly experienced in the engineering, design and selection of air conditioning equipment and installations for office buildings and industrial applications. Knowledge of modern equipment; its characteristics, economic application, also comprehensive knowledge of duct work, contractors and builders practices highly desirable. Salary commensurate with experience. Some travel involved. Give complete record education, experience, age, availability. Location New York City.

P 8074, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

WANTED—Mechanical and Structural Engineers For designing and detailing work on concrete reinforcement, structural steel and hangar door construction. Requirements are three to four years practical experience or recent graduation from technical school. Desirable working conditions and opportunities for advancement. These openings are with a nationally known steel fabricating company, located in eastern Ohio. Applicants will please submit a record of their qualifications.
P-7737, Eng. N-R, 520 N. Mich. Ave., Chicago

A COURSE OF INSTRUCTION BY MAIL IN

STRUCTURAL ENGINEERING

Thirty-ninth Year

(In the following list, Courses A, B, and C are abbreviated from our complete Structural Engineering course).
A—Public Works Structures.
B—Architectural Engineering.
C—Special Course (State Board Exams. for P.E.)
D—Structural Engineering (complete).
E—Preparatory Course (for non-technical men).

Our courses have helped thousands of men to better positions.
Information sent without obligation. WRITE TODAY

WILSON ENGINEERING CORPORATION

College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

REFINERY CONSTRUCTION SUPERINTENDENT WANTED

Minimum 5 yrs. experience in full charge of refinery construction. Salary range, $9,000 to $15,000. Location California. Furnish complete record and photo.

P 7954, Engineering News-Record
68 Post St., San Francisco 4, Calif.

HELP WANTED—MALE

LANDSCAPE FOREMEN

Our jobs consist of out-of-town large public housing projects per plans and specifications—as well as roadside improvements on highway work, various states, which work involves large quantities placing top soil, seeding, sodding, planting, etc.

Reliable, capable, bondable men, between 40-50 years of age, with practical experience to run jobs will find our proposition lucrative and permanent.

Write giving full experience, references, and recent snapshot of yourself.

WILFRED ROADSIDE IMPROVEMENT CORP.
475 Fifth Avenue New York City

WANTED BY

LEADING MANUFACTURER OF EXCAVATING MACHINERY

Young ambitious man with Civil Engineering training and some field experience in excavation work to learn our business. To the qualified man this will mean a permanent position with excellent possibilities with this long established Chicago concern. Write giving complete details.

P-8334, Engineering News-Record
520 North Michigan Ave., Chicago, Ill.

CONSTRUCTION SUPERINTENDENTS

Large engineering organization desires construction engineers. Must have considerable recent experience in steam-electric power plant construction, and be thoroughly qualified to direct field layout work, preparation of construction reports and specifications for subcontracts. Submit complete experience record.

P 8075—Engineering News-Record
330 W. 42 St., New York 18, N. Y.

SALESMEN WANTED

Old line construction and industrial machinery distributor desires one or possibly two salesmen for established territory in Kentucky. Give experience, age, educational background with full particulars.

SW-8345, Engineering News-Record
520 North Michigan Ave., Chicago 11, Ill.

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (39 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

POSITIONS VACANT

(Continued from page 377)

WANTED: MAN between 25 and 35 to take charge of service station construction for small Independent Oil Marketing Company. Must be able to work from blue print and should have some drawing ability. Should be free to travel, Ohio, Pennsylvania and West Virginia. P 8272, Engineering News-Record.

WANTED—AN experienced estimator for an established Philadelphia concern for large sewers, tunnels and bridges. State salary, experience, and when available. P 8285, Engineering News-Record.

ENGINEERS: LARGE college offers $3000, approx. half time teaching-studying. All ranks univ. positions, experienced $4500-$6500 nine months. Give phone, photo, qualifications. Cline Teachers Agency, East Lansing, Mich.

WANTED: TESTING Engineer, experienced in laboratory and field testing of construction materials particularly concrete, asphalt paving and soils. P.E. license desirable. Location Ohio; position permanent. State age, education, experience and salary. P 8293, Engineering News-Record.

WANTED—CONCRETE Technician to establish a research laboratory on large project, study materials and methods, prepare mix designs and be responsible for quality. P 8336, Engineering News-Record.

INTERESTED SECURING services of competent experienced piping draftsman having fair knowledge of power piping standards for permanent employment in Midwest engineering organization. Communicate P 8327, Engineering News-Record, regarding salary and details of experience and submit brief digest of experience. Position will not require man to take independent charge but opportunities will be offered to develop under competent leadership.

DRAFTING ROOM Supervisor. Experienced FHA subdivision and land surveying practice. Steady employment. Metropolitan Long Island. P 8367, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

ALASKA SALES Representative wanted by nationally known manufacturer of portable gasoline-engine-driven pumps, generators, chain saws, electric paving breakers, etc., selling to contractors, railroads, utilities, mining and pulpwood industries on commission basis. Exclusive territory. State qualifications, references, experience. Company official will come to Anchorage in April for interviews with qualified applicants. Write Homelite Corporation, Port Chester, New York.

(Continued on opposite page)

LEARN TO ESTIMATE

Today, more than ever before, you must know how to analyze building costs. If you want to become a successful builder, learn how to prepare a correct estimate in a hurry. Get in on the profitable work now available wherever you turn. Your success is assured if your estimates are right; otherwise you are licked before you start.

The Tamblyn System of Estimating will make a real estimator out of you in a few weeks of your spare time. We are so sure that you will want to learn it, that we will send you our complete home study course for ten days examination absolutely free. If you don't think it is the finest thing you ever saw, just return it and it won't cost you a cent. If you like it and want it, send us $8.75 when 10 days are up and $7.50 per month until $38.75 is paid.

This estimating system is based on forty years of actual construction experience. It has been sold all over the world for more than twenty years. Thousands of estimators and contractors swear by it. Our offer isn't hot air and big talk. We don't give you a diploma or a lapel button, but we do teach you down to earth estimating which will bring you profitable business.

Just send your name and address today, and we will mail you the complete course at once for your approval.

TAMBLYN SYSTEM
1115 So. Pearl St., E-272
Denver, Colo.

Napoleon once said
"An Army Marches on Its Stomach"
We Have Fed Millions

KANE INDUSTRIAL SERVICE

Industrial Feeding.
Labor Camps.
Labor Camp Equipment.
Free Employment Agencies.
30 Years' Experience in the Housing and Feeding of Men for Satisfied Clients.
Abundant Labor Supply available for Large Projects Anywhere.

VALENTINE B. KANE & ASSOCIATES
1410 State St. New Haven 11, Conn.

Don't forget the

BOX NUMBER

When answering the classified advertisements in this magazine don't forget to put the box number on your envelope. It is our only means of identifying the advertisement you are answering.

SALES OPPORTUNITY WANTED

Established civil and structural engineers desire to contact producer or manufacturer as sales, estimating or construction representative in Ohio and/or West Virginia. Registered engineers with excellent engineering and sales background.

SA-8286, Engineering News-Record
520 North Michigan Ave., Chicago 11, Ill.

POSITIONS WANTED
Continued from opposite page)

SUPT. WATER Works—Extensive experience in operation and maintenance of water plants and distribution systems. Especially successful in chemical treatments, filtration, improvements in distribution systems, chemical, physical, bacteriological and microscopical examinations of waters of all types. Education B.S. in chemical engineering with 12 years of active experience with plants of all sizes. Interested in position with medium sized city, 30,000 to 200,000 population. Available after April 1st. PW 8279, Engineering News-Record.

CIVIL ENGINEER, 20 years heavy construction experience and engineering sales. Eight years tropics. Speak excellent Spanish. Office Manager last position. Available immediately. Foreign or domestic. PW 8243, Engineering News-Record.

EXECUTIVE ACCOUNTANT—C.P.A. (NY) offers broad experience in accounting matters, taxes and office management. Age 46. Excellent references. PW8119, Engineering News-Record.

CIVIL ENGINEER—Young, Aggressive. One year experience with water front construction company New York City. Now working for American Oil Co. in South America. Desires job abroad or in USA. Perfect knowledge Spanish. PW 8109, Engineering News-Record.

ENGINEER-EXECUTIVE, twenty-two years experience in practically all types of industrial, commercial and government projects. Civil Engineer, age 42, experienced in the supervision of both design and construction. Last salary $13,000. Good references. Available immediately. PW-7984, Engineering News-Record.

CIVIL ENGINEER. Registered. Experienced design and construction chemical plants, oil refy., plant layout, drydocks, piers. Capable office man. Domestic or foreign. Available immediately. PW-8196, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, industrial plants, conveyor systems, coal tipples and coal separation, quarry installations. Age 53, twenty-five years of continuous construction experience. Graduate engineer. PW-8224, Engineering News-Record.

PARTY CHIEF. Designer, Instrument man wants position as assistant county or city engineer, or with consulting engineer or contractor. PW 8223, Engineering News-Record.

CIVIL ENGINEER, B.S., P.E. & L.S., 29, single; employed. Experienced in industrial building construction, also housing, sewers, streets, surveys. Desire responsible job in field or office as contractors engineer, architects representative, or plant engineer for construction and maintenance. Can handle field design, estimating, supervision. Some experience on installation of chemical plant and power house equipment. $5200 to start. Prefer East but other locations considered. PW-8210, Engineering News-Record.

GENERAL SUPERINTENDENT or Superintendent available. 25 years. Broad experience supervising and estimating. All types of paving, heavy-excavating, large-sewers, water and gas main construction, air-ports, earth-fill dams, many other classes of construction. Cost conscious, prefer middle west or west. Sober, honest, reliable, best references. PW 8212, Engineering News-Record.

GENERAL FOREMAN, 20 years experience. Reinforcing steel, drainage, and underground electrical duct line construction. Available at once. Go anywhere if permanency and adequate compensation assured. References furnished. PW 8290, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT: over 15 years experience in commercial, industrial, and governmental work. Excellent references. PW 8317, Engineering News-Record.

SUPERINTENDENT, CONSTRUCTION. 20 years of wide experience on housing projects, sewage treatment plants, hospitals, schools, industrial and commercial bldgs., age 46, willing to travel, prefer eastern Penna. or New Jersey. PW 8359, Engineering News-Record.

BUILDING: PROJECT or Construction Manager also General Superintendent; 30 years experience full charge of large projects, years actual experience cost clerk; estimator; purchasing; closing; manager; general and job superintendent; all types of structures and allied construction all kinds of contracts. PW-8198, Engineering News-Record.

● *We welcome information about*

NEW

BUILDING MATERIALS, OR METHODS OF CONSTRUCTION

with a view to helping in their

FINANCING AND PROMOTION

Address communications only by mail to

CITY INVESTING COMPANY

25 Broad Street New York 4, N. Y.

WANTED

Contractors desiring to do resealing work of expansion, contraction and other types of cracks in paving and monolithic construction with rubberized bituminous material ZERO-LASTIC, a compound which will maintain seal at zero degrees temperature—a lucrative contracting business. For particulars, write to:

RUBBERIZED OIL PLASTICS CO.
(Not Inc.)
6049 W. 65th St. Chicago 38, Ill.

POSITIONS WANTED

CIVIL STRUCTURAL Engineer, registered. Design and fabrication background. Available for supervising position only. PW 8298, Engineering News-Record.

CONTRACTORS ASSISTANT, Chief Estimator desires permanent connection with General Construction Company. Considerable experience in managing contracts covering buildings, bridges, waterworks etc., under highly competitive conditions. PW 8297, Engineering News-Record.

CONSTRUCTION EXECUTIVE: Professional Engineer with broad experience in project development from inception to completion involving design, specifications, estimates, supervision of construction, negotiating and award of contracts, inspections, cost analysis, scheduling and job co-ordination. During past eight years experience has involved the development and construction of an aggregate of forty major industrial projects and prior on varied types of projects such as banks, hotels, schools and office buildings, fertilizer, sulphuric acid plants; rubber; paper mills; harbor; port improvements; sewage disposal and water systems. PW 8350, Engineering News-Record.

LANDSCAPE ENGINEER, 29, B.S. in Landscape Architecture. Experience planning, survey layout, and development of parks, house and apartment developments. Little or no travel desired. Location immaterial. PW 8365, Engineering News-Record.

FIELD SUPERVISOR or Foreman: 20 years exp. all types excavation, grading, drainage and surfacing. Buildings, highways, airports, levees, dams. Know how to handle equipment and men. Cost conscious, age 42, married, steady. Write to C. E. Kerlin, Port Trevorton, Pa.

FOR SALE

Contracting business, road building, land clearing, excavating, etc. Completely equipped with good machinery, now operating.

Write P. O. Box 713 Little River Sta. Miami, Fla.

FOR SALE

Heavy Construction Co.

Land Clearing, Road Building, Excavating
$30,000 in signed contracts
Inventory value only
Addressee 2265 S. W. 28th St.
Miami, Fla.

POSITIONS WANTED

CIVIL ENGINEER—Graduate, Registered, age 39, desires connection with construction or engineering firm in supervisory capacity. Wide experience in general construction, principally industrial buildings and facilities. Interested in position of responsibility. PW 8356, Engineering News-Record.

PLANT ENGINEER, M.E., Graduate, married, age 36, 20 months plant engineer, job estimating, maintenance, plant construction, production surveying. 5 years air craft and engine maintenance. Desire permanent position. PW 8333, Engineering News-Record.

LABOR RELATIONS and Personnel Director-36-Broad experience in construction industry. Excellent contacts with officials of international building trades unions, building trades department and government labor agencies. Thoroughly familiar with federal labor statutes affecting construction industry. PW 8366, Engineering News-Record.

BUSINESS OPPORTUNITY

Wanted: Purchaser of part interest in reputable construction corporation in Southwestern N. Y. State qualification, financial responsibility. Answers confidential. Address BO 8351, Engineering News-Record.

SUPERINTENDENT of CONSTRUCTION

Thoroughly experienced General building. Hospitals, Heavy construction, Reinforced concrete, Estimating and Purchasing. Would consider a financial interest after a trial period. Reg. Professional Engineer. Mem. ASCE.
Only Reliable Contractors considered.

BO-8328, Engineering News-Record
330 West 42nd Street, New York 18, N. Y.

U. S. Government
(Continued from page 352)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2596) will be received by Bureau of Reclamation, Lewiston, Idaho, until 10 a.m., April 1, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of the water treatment plant at Lewiston Orchards, Idaho. The work is situated approximately 6½ miles southeast of Lewiston, Idaho. Principal items are approximately: 25,000 cu. yds. excavation; 2,000 cu. yds. construction embankment; 15,000 cu. yds. backfill; installing miscellaneous filter equipment and furnishing and installing filter house; and other work. Time allowed for completion will be 180 days. For particulars, address Bureau of Reclamation, Lewiston, Idaho; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (919)

OFFICIAL PROPOSALS

Bids: April 17, 1949 (920)

Water Works Improvements

CITY OF WINSTON-SALEM, NORTH CAROLINA
NOTICE TO CONTRACTORS

Sealed proposals addressed to the Purchasing Department will be received and publicly opened and read aloud by the Secretary to the Board of Aldermen in the Council Chamber at the City Hall, City of Winston-Salem, North Carolina, until 2:00 P.M., E.S.T., April 7, 1949, for:

(a) *CONTRACT NOS. 1 AND 2*—the construction of a 36" diameter water transmission main from the Yadkin River at Idols to the Salem Filter Plant, a distance of approximately 68,600 lineal feet.

(b) *CONTRACT NOS. 3 AND 4*—the construction of a 48" diameter water transmission main from the Salem Reservoir to the Salem Filter Plant, a distance of approximately 8,800 lineal feet.

(c) *CONTRACT NOS. 5, 6, AND 7*—the construction of an intake structure and pumping station along the Yadkin River at Idols.

(d) *CONTRACT NO. 8*—the construction of a 725,000 gallon capacity standpipe at Station 150+00 along the transmission main between the Yadkin River and the Salem Filter Plant.

(e) *CONTRACT NOS. 9, 10, 11, 12 AND 12A*—the construction of alterations and additions to the existing 12 M.G.D. Salem Filter Plant and Pumping Station to enlarge it to a 20 M.G.D. Plant.

(f) *CONTRACT NOS. 13 and 14*—the construction of cement-lined, cast iron water supply and distribution system piping in Winston-Salem, North Carolina. Approximately 4,000 lineal feet 18" and approximately 6,705 lineal feet, 24". Approximately 6,960 lineal feet, 12". Approximately 930 lineal feet, 8".

(g) *CONTRACT NO. 22*—the construction of a one million gallon capacity elevated steel water storage water tank in the Ardmore District of Winston-Salem, North Carolina.

Copies of the plans, specifications and other contract documents are on file and open to public inspection at the offices of John D. Spinks, Consulting Engineer, Nissen Building, Winston-Salem 3, North Carolina; at the office of Albright & Friel, Inc., Consulting Engineers, 1528 Walnut Street, Philadelphia 2, Pennsylvania, and at the office of the Director of Public Works, City Hall, Winston-Salem, North Carolina; and sets of documents may be obtained during any business hour at any of these offices upon paying a deposit of $10.00 for each set of documents on any one contract. If the documents are returned in good condition within five (5) days after the opening of bids, the full amount of the deposit for one set will be refunded to each actual bidder; and other deposits will be refunded with a deduction of $5.00 to defray the actual cost of reproduction of the sets of documents. If the said documents are not returned within the time stated, the entire amount of deposit will be forfeited.

Each proposal shall be accompanied by a deposit with the Secretary of the Board of Aldermen of cash or a certified check payable to the City of Winston-Salem on some bank or trust company organized under the laws of the State of North Carolina of an amount equal to not less than two (2%) per cent of the amount of the proposal, said deposit to be retained by the City in event of withdrawal of bid after public opening, or if the successful bidder shall fail to execute the contract within ten (10) days after the award, or give satisfactory surety. The proposal shall be irrevocable after the public opening and cannot be withdrawn after that time, and said deposit shall be forfeited to the City of Winston-Salem as liquidated damages, if the bid is withdrawn after the public opening, or if the bidder fails to execute formal contract and provide satisfactory surety within ten (10) days after the award. All bids which are not accepted within thirty days after the public opening shall be deemed rejected and the deposit shall be returned to the bidder.

A surety bond of one hundred (100%) per cent of the amount of the contract shall be required for the faithful performance of the contract and to indemnify the City against loss due to defective workmanship, materials and appurtenances for a period of one year. Premiums are to be paid by the Contractor and bond to be endorsed by a State representative. The Surety must be a substantial surety company satisfactory to the City and authorized by law to do business in the State of North Carolina.

The Board of Aldermen of the City of Winston-Salem, North Carolina, hereby reserve the right, to refuse and reject any or all bids; and the said Board of Aldermen also reserve the right to waive any informalities in bids received.

No bid may be withdrawn by the bidder for thirty (30) days after the scheduled closing time for the receipt of bids.

Consideration will be given only to bids of Contractors who submit evidence showing that they are licensed under "An Act to Regulate the Practice of General Contracting" ratified by the General Assembly of North Carolina on March 10, 1925, and as subsequently amended.

BY ORDER OF THE MAYOR AND BOARD OF ALDERMEN, CITY OF WINSTON-SALEM, N. C.
RALPH L. DIXON
Secretary, Board of Aldermen

Bids: March 30, 1949 (921)

State Road Work

STATE DEPARTMENT OF PUBLIC WORKS
BUREAU OF CONTRACTS & ACCOUNTS
ALBANY, NEW YORK

Sealed proposals will be received by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., until ten-thirty o'clock a.m., eastern standard time, on WEDNESDAY, March 30, 1949, for projects in the following counties:

County	Deposit plans	Bid deposit	Type	Miles	Engineer's estimate
Bronx	$20	$150,000	Conc. & Steel Viad. App. Misc. 0.07 Mi. Conc. 0.23 Mi. 9" thk., 2 at 36'	0.30	$2,625,000
Broome	5	9,000	Asph. Conc	3.93	159,000
Columbia & Rensselaer	10	100,000	Conc. 9" Thk., 2 at 25', 4' mall	5.78	1,695,000
Delaware	10	12,000	Reinf. Conc. Slabs 40', 40', 37' Steel Beam 62'		
			Asph. Conc. Opt.	0.40	208,000
Erie	5	6,000	Asph. Conc.	2.13	104,000
Livingston	5	17,000	Asphalt Conc.	7.45	315,000
Madison & Oneida	10	30,000	Welded Girder Span 115'; Misc. 0.06 Mi.; Conc. 2.90 Mi. 9" Thk. 24' Wdt.	2.96	559,000
This project involves the use of Welded Girder Alpha Construction and is patented; the royalty being $64.75.					
Monroe	5	25,000	Cant. Deck Girder 2 at 84': Anchor Spans 2 at 44'; Suspended Span 1 at 100' (Canal Bridge)	0.37	484,800
This project involves the use of I-Beam Alpha Construction which is patented and the royalty is $60.27.					
Monroe	5	6,000	B. M. Road Mix	2.61	102,000
Monroe & Ontario	10	30,000	I-Beam 4 Spans 2 at 47': 2 at 87½': Rig. Fr. Span 34': I-Beam 4 Spans: 2 at 38'; 2 at 57½' D. S. T.		
			Gravel	0.16	$16,000
This project involves the use of I-Beam Alpha Construction which is patented and the royalty is $308.00.					
Montgomery	5	4,500	Bit. D.S.T. Grad Gravel	2.20	77,000
Nassau	5	4,000	I-Beam Widen.	0.04	73000
This project involves the use of I-Beam Alpha Construction which is patented and the royalty is $154.00.					
Onondaga & Cayuga	5	30,000	Thru Truss 312' Span; 4 App. Spans I-Beams at 75' each Conc. 0.12 Mi. Asph. Conc. Opt. 0.31 Mi. (Canal Bridge)	0.43	$29,080
This project involves the use of I-Beam Alpha Construction and is patented; the royalty being $209.72.					
Orange	20	180,000	Rigid Frame, 2 Spans 54' each; Rigid Frame 50' Span; Rigid Frame 44' 10' Span: Built up Beam Span 97'; Conc. 9' Thk. 2 at 36'	1.48	3,050,000
Orange	5	23,000	I-Beam Span 47½' Conc. 8" Thk., 24' Wide	0.41	399,000
This project involves the use of I-Beam Alpha Construction which is patented, and the royalty is $56.00.					
Rensselaer	5	7,000	Asph. Conc.	4.54	124,000
Schenectady	5	6,000	Asph. Conc.	2.84	106,000
Suffolk	5	11,000	Reinf. Conc. I-Beam tot. 165' Stabilized App.	0.23	184,000
Westchester	10	44,000	Conc. 9" Thk., 2 at 28'	2.82	790,000

Maps, plans, specifications, and estimates may be obtained at the office of the Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers in whose district the roads are located. The name and address of the District Engineers will be furnished on request.

Plans may be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. Tallamy
SUPT. OF PUBLIC WORKS
(Continued on page 383)

Official Proposals Columns of

ENGINEERING NEWS-RECORD

are MUST reading, each week,

for contractors, engineering-construction companies, equipment and materials manufacturers, all over the United States.

. . . and used regularly for over 50 years by government, state, county and municipal departments for advertising bids.

Official Proposal Division

ENGINEERING NEWS-RECORD

New York 18, N. Y.

Cards are arranged alphabetically by states - cities - names

PROFESSIONAL SERVICES

Additional cards are to be found on pages following

Palmer and Baker, Inc.

Consulting Engineers

For Problems of Transportation
Subaqueous Vehicular Tunnels
Rock Tunnels
Utility Tunnels
Bridges
Grade Separations
Highways
Airports
Traffic Studies
Parking Problems
Waterfront & Harbor Structures

Mobile, Alabama

Polk, Powell and Hendon

Engineers—Consultants

Harry H. Hendon—
Hugh A. Powell

Water Systems, Sewers and Sewage Treatment Plants, Steam and Hydro Plants, dams, drainage, industrial buildings, municipal planning reports, plans, estimates and construction supervision.

620 Chamber of Commerce Bldg.,
Birmingham 3, Ala.

John S. Cotton

Consulting Engineer

Hydroelectric, water supply, irrigation, and multiple purpose projects; flood and erosion control; river basin development planning; dams and their foundations; tunnels; marine structures; valuations; rates.
28 Brookside Dr., San Anselmo, Calif.

Heron Engineering Co.

Chemical, Mining, Industrial and Hydraulic Plants, Irrigation, Water Supply, Power and Sewerage Systems, Large Rockfill Dams, Airports, Oil, Gas and Water Pipe Lines.
2000 So. Acoma, Denver 10, Colorado
Chama, New Mexico.

Industrial Drilling and Boring Corp.

FOUNDATION BORINGS
GEOLOGICAL SURVEYS

P. O. Box 1206 — 1746 E. Adams St.
Jacksonville, Florida

Patchen & Zimmerman

Engineers

Construction Plant, Cofferdams, Structures, Industrial Plants, Dams, Sewerage and Sewage Treatment, Water Supply and Treatment, Supervision, Surveys, Reports.
Daniel Field Airport.
Augusta, Ga.

Alvord, Burdick & Howson

Charles B. Burdick
Louis B. Howson Donald H. Maxwell

Consulting Engineers

Water Works	Sewerage
Water Purification	Sewage Treatment
Flood Relief	Power Generation
Drainage	Appraisals

Room 1401
20 North Wacker Drive, Chicago

Consoer, Townsend & Associates

Water Supply—Sewerage—Flood Control & Drainage — Bridges — Express Highways—Paving—Power Plants, Appraisals — Reports — Traffic Studies—Airports.
351 East Ohio St., Chicago 11, Illinois

Greeley and Hansen

Engineers

Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal
220 S. State Street, Chicago 4

Economy

The service of the Consultant can usually be an economy in coping with your most intricate problems.

De Leuw, Cather & Company

CONSULTING ENGINEERS

Transportation, Public Transit and Traffic Problems

Industrial Plants	Grade Separations
Railroads	Expressways
Subways	Tunnels
Power Plants	Municipal Works

150 North Wacker Drive
Chicago 6, Ill.
79 McAllister Street
San Francisco 2, Calif.

Harza Engineering Co.

Consulting Engineers

L. F. Harza
E. Montford Fucik Calvin V. Davis
Hydro-Electric Power Projects
Transmission Lines, System Management, Dams, Foundations, Harbor Structures, Soil Mechanics
400 W. Madison St., Chicago 6, Ill.

Hazelet & Erdal

Consulting Engineers

Fixed and Movable Bridges	Designs
	Supervision
Superhighways	Investigations
Industrial Bldgs.	Reports
Airports	Dams
	Surveys

Monadnock Block, Chicago 4, Ill.
Dixie Terminal Bldg., Cincinnati 2, O.
Heyburn Bldg., Louisville 2, Ky.

Pioneer Service & Engineering Co.

Consulting and Design Engineers
Operations - - - Purchasing
Steam - - Hydraulic - - Gas
Public Utilities - - Industrials
221 So. La Salle St. Chicago 4

Sargent & Lundy

ENGINEERS

Steam and Electric Plants
Utilities—Industrials
Studies—Reports—Design
Supervision
Chicago

Interstate Engineering

Consulting Engineers

Design and Supervision of Municipal Improvements
Water Works, Sewage, Drainage, Surveys
Foundation Borings
Rock Island, Illinois.

Jenkins, Merchant & Nankivil *Consulting Engineers*

Water Systems, Power Development, Flood Control, Airports, Traffic Surveys, Municipal Improvements, Sewerage, Industrial Plants, Recreational Facilities, Investigations and Reports.
805 East Miller St., Springfield, Ill.

Moore & Owen

Engineers

Water, Sewage, Incineration Refuse Disposal, Airfields.
Complete Water & Sewage Laboratories—Industrial Wastes.
1456 N. Delaware St., Indianapolis 2, Ind.

Boyd E. Phelps, Inc.

Engineers

Water Supply and Purification
Sewage and Industrial Waste Treatment
Power Generation, Airfields, Reports, Investigations, Appraisals.
622½ Franklin St., Michigan City, Ind.

Chas. W. Cole & Son

Sewerage, Sewage Treatment, Industrial Wastes, Water Supply, Water Treatment, Airports, Industrial Buildings.
Chas. W. Cole, Sr. Chas. W. Cole, Jr.
Ralph J. Bushee M. J. McErlain
Wilber H. Gartner
220 W. LaSalle, South Bend, Ind.

Stanley Engineering Company, *Consulting Engineers*

Airports - Drainage - Electric Power
Flood Control - Industrial - Rate Studies - Sewerage - Valuations - Water Works
Hershey Building. Muscatine, Ia.

Saxe, Williar & Robertson

ENGINEERS • CONSULTANTS

Industrial Buildings
Bridges - Structures - Foundations
Highway & Regional Planning
Harbor Works • Port Development
Reports • Investigations

130 West Hamilton St.,
Baltimore 1, Maryland

G. Douglas Andrews Associates

Engineering Consultants

General Engineering
and Consulting Services
Valuations and Management
212 Washington Avenue
Towson, Baltimore 4
Maryland

Whitman, Requardt and Associates

Engineers — Consultants

Civil — Sanitary — Structural
Mechanical — Electrical
Reports, Plans, Supervision, Appraisals
1304 St. Paul Street
Baltimore 2, Maryland

Chas. T. Main, Inc.

Engineers

Design and Supervision of Construction for Industrial Plants
Electrical, Steam and Hydraulic Engineering
Investigations, Reports and Appraisals
Chamber of Commerce Bldg.
80 Federal St., Boston, Mass.

Metcalf & Eddy

ENGINEERS

Investigations Reports Design
Supervision of Construction and Operation
Management Valuation Laboratory
Statler Building, Boston

Philip B. Streander and Affiliates

Consulting Sanitary Engineers

Water Supply, Treatment, Distribution
Sewage, Sewage Treatment
Plans, Supervision, Reports
120 Tremont Street, Boston 8, Mass.

Burns & McDonnell Engineering Company

Consulting Engineers 50th Year

Water Works, Light and Power, Sewerage, Reports, Designs, Appraisals
Rate Investigations.
Box 7088 Country Club P. O.
95th & Troost, Kansas City 2, Mo.

Black & Veatch

Consulting Engineers

4706 Broadway
Kansas City, Missouri

Sewerage, Sewage Disposal, Water Supply, Water Purification, Electric Lighting, Power Plants, Valuations, Special Investigations, Reports and Laboratory Service

E. B. Black E. L. Filby
A. P. Learned N. T. Veatch, Jr.
F. M. Veatch J. F. Brown
R. E. Lawrence

Harrington & Cortelyou

Consulting Engineers

Frank M. Cortelyou
E. M. Newman F. M. Cortelyou, Jr.
Movable and Fixed Bridges of All Types, Foundations, and Related Structures
1004 Baltimore Kansas City 6, Mo.

Russell & Axon

Consulting Engineers

Geo. S. Russell F. E. Wenger
Joe Williamson, Jr.
Water Works, Sewerage, Sewage Disposal, Industrial and Power Plants, Appraisals.
408 Olive Street Municipal Airport
St. Louis 2, Mo. Daytona Beach, Fla.

Sverdrup & Parcel

Consulting Engineers

Bridges, Structures and Reports
Industrial and Power Plant Engineering.
Syndicate Trust Bldg., St. Louis 1, Mo.

A. L. Alin

Consulting Engineer

Dams
Hydroelectric Power
Flood Control
5927 North 36th St.
Omaha 11, Nebraska

Benjamin L. Smith & Associates

Engineers

Investigations—Reports
Designs—Supervision—Valuations
Municipal Engineering and Public Utilities
11 North Pearl St. Albany 7, N. Y.

E. Lee Heidenreich, Jr.

Consulting Engineer

Quarries	Plant Layout
Crushing Plants	Storage
Milling Plants	Methods
Concrete Products Plants	Design
	Appraisals

67 Second St. Newburgh, New York

Andrews & Clark

CONSULTING ENGINEERS

DESIGN—CONSTRUCTION
SUPERVISION—REPORTS

305 East 43rd Street
New York 31, N. Y.

Barker & Wheeler

Water Supply	Utility and
Sewerage	Industrial
Sewage Disposal	Valuations
Power Systems	Reports

New York City, 11 Park Place
Albany, N. Y., 36 State St.

Clinton L. Bogert Associates

Consulting Engineers

Water and Sewage Works
Refuse Disposal Industrial Wastes
Drainage Flood Control
624 Madison Ave., New York 22, N. Y.

Bowe, Albertson & Associates *Engineers*

Sewerage—Sewage Treatment
Water Supply—Purification
Refuse Disposal—Analyses
Valuations—Reports—Designs
110 William St., 2062 Kings Hgway.
New York 7, N. Y. Fairfield, Conn.

Buck, Seifert & Jost

Consulting Engineers

(Formerly Nicholas S. Hill Associates)

Water Supply — Sewage — Hydraulic Developments, Reports and Valuations.
Chemical and Biological Laboratories.
New York City, 113 E. 19th St.

L. Coff

Consulting Engineer

Prestressed Concrete
Bridges and Frames
198 Broadway New York 7, N. Y.

Christiani & Nielsen

ENGINEERS

Harbor Works Bridges Foundations
Industrial Buildings Power Plants
Dams Tunnels Highways Railroads

350 Fifth Ave., New York 1, N. Y.
Buenos Aires Rio de Janeiro Lima
Montevideo Caracas Mexico Bogota
Paris London The Hague
Stockholm Oslo Copenhagen
Cape Town Bangkok

Cards are arranged alphabetically by states - cities - names

PROFESSIONAL SERVICES

Additional cards are on preceding and following pages

Hugh L. Cooper & Co.

Incorporated

General Hydraulic Engineering

Including the design, financing, construction and management of hydro-electric power plants.

350 Fifth Ave., New York 1, N.Y.

Ebasco Services Incorporated

Engineers - Constructors
Business Consultants
Design and Construction
Financial and Operating Consultation
Investigations and Reports
Consulting Engineering

Two Rector Street New York

Fay, Spofford & Thorndike

Engineers

Charles M. Spofford Ralph W. Horne
John Ayer William L. Hyland
Bion A. Bowman Frank L. Lincoln
Carroll A. Farwell Howard J. Williams

Bridges and Industrial Plants
Water Supply and Sewerage Works
Port and Terminal Works Airports

Valuations, Investigations, Designs, Supervision of Construction.

11 Beacon St., Boston, Mass.
420 Lexington Ave., N. Y.
(Graybar Bldg.)

Fraser-Brace Engineering Co., Inc.

DESIGN - CONSTRUCTION - REPORTS - APPRAISALS
COMPLETE MANAGEMENT OF PROJECTS

10 East 40th St.,
New York 16, N. Y.

Hardesty & Hanover

Consulting Engineers

Successors to Waddell & Hardesty

Bridges
Long Spans of All Types
Movable—Lift, Bascule and Swing
Hanover Skew Bascule
Steel and Concrete Spans
Grade Crossing Eliminations

Other Structures
Foundations
Supervision, Reports, Appraisals

101 Park Avenue, New York 17, N. Y.

Frederic R. Harris

FREDERIC R. HARRIS, INC.

ENGINEERS

DESIGNS MANAGEMENT
REPORTS APPRAISALS

Harbor & Waterfront Work, Floating Drydocks, Port Development, Hydro-Electric Development, Flood Control, Water Supply, Sanitary & Industrial Waste Disposal.

New York 27 William Street
Philadelphia Fidelity-Phila. Bldg.
San Francisco Ferry Bldg.
Vera Cruz, Mexico

Lockwood, Kessler & Bartlett, Inc.

ENGINEERS — SURVEYORS

General Engineering Services
Aerial and Ground Surveys
Photogrammetric Mapping
Domestic and Foreign

32 Court St. Brooklyn 2, N. Y.

Howard, Needles, Tammen & Bergendoff

Consulting Engineers

Bridges and Structures

New York, N. Y., 55 Liberty St.
Kansas City, Mo., 921 Walnut St.

Knappen Tippetts Abbett Engineering Co.

(Knappen Engineering Co.)

Ports, Harbors, Flood Control, Power, Dams, Bridges, Tunnels, Highways, Airports, Traffic, Foundations, Water Supply, Sewerage
Reports Design Supervision
Consultation

62 West 47th Street, New York City

Modjeski and Masters

Consulting Engineers

Design, Supervision, Reports, Inspection and Investigations, of Bridges, Structures, and Foundations.
535 Fifth Ave. State Street Bldg.
New York, N. Y. Harrisburg, Penna.

Moran, Proctor, Freeman & Mueser

Consulting Engineers

Foundations for Buildings, Bridges and Dams; Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests; Reports, design and supervision.

New York 17, N.Y., 420 Lexington Ave.

PARDO, PROCTOR, FREEMAN & MUESER
Ap. Correos 614 Caracas, Venezuela.

Parsons, Brinckerhoff, Hall & Macdonald

ENGINEERS

Airports, Bridges, Tunnels, Highways, Traffic and Transportation Reports, Subways, Foundations, Harbor Works, Valuations, Power Developments, Industrial Buildings, Dams, Sewerage, Water Supply.

51 Broadway, New York 6, N. Y.

Malcolm Pirnie Engineers

Civil & Sanitary Engineers

Malcolm Pirnie Ernest W. Whitlock
Richard Hazen G. G. Werner, Jr.

Investigations, Reports, Plans, Supervision of Construction and Operations. Appraisals and Rates

25 W. 43rd St., New York 18, N. Y.

The Pitometer Company

Engineers

Water Waste Surveys
Trunk Main Surveys
Water Distribution Studies
Penstock Gaugings

New York, 50 Church St.

Alexander Potter Associates

Consulting Engineers

Water Works, Sewerage, Industrial Wastes, Hydraulic Works, Reports, Designs, Appraisals.

50 Church St., New York, N. Y.

Clyde Potts

Weston Garett-Stanley N. Williams
Consulting Sanitary Engineers
Sewerage and Sewage Disposal
Water Works and Water Supply
Valuations and Appraisals
30 Church Street, New York 7

Sanderson & Porter

Engineers and Constructors

New York Chicago
San Francisco Los Angeles

Scheidenhelm, F. W.

Consulting Engineer

Hydraulic Engineering; Hydro-electric Development; Water Supply; Flood Control; Engineering Problems relating to Water Rights and Water Power Law; Appraisals. 50 Church Street, New York 7, N. Y.

Seelye, Stevenson & Value

Consulting Engineers
Successors to
Elwyn E. Seelye & Company
101 Park Avenue
New York 17, N. Y.

Airports, Highways, Dams, Concrete, Steel, Welding, Foundations, Stadia, Appraisals & Industrial Plants.

Elwyn E. Seelye, Albert L. Stevenson
Burnside R. Value
L. C. Hammond, H. S. Woodward, Austin M. Rice, C. H. Hamilton, V. J. Pacello, C. M. Throop, B. Sahlberg, W. D. Bailey, J. U. Wiesendanger, F. King.

Frederick Snare Corporation

Engineers—Contractors

Harbor Works, Bridges, Power Plants, Dams, Docks and Terminals.

Difficult and Unusual Foundations A Specialty.

233 Broadway, New York City 7
1400 South Penn Square, Philadelphia

Havana, Cuba Lima, Peru
Bogota, Colombia, Caracas, Venezuela, San Juan, Puerto Rico, Guayaquil, Ecuador

D. B. Steinman

Consulting Engineer

Bridges
Design, Construction, Strengthening, Investigations, Reports, Advisory Service.

117 Liberty St., New York 6, N.Y.

Sy-Co Engineers

G. A. Syversen, G. Randolph Syversen
H. Syversen—Consultants
Industrial Plants, Commercial Buildings, Power Plants, Materials Handling Systems
Estimates—Reports—Design
Supervision
39 Broadway New York 6, N. Y.

Taylor, Henry W.

Water Supply, Sewerage
Garbage Disposal, Incineration
Industrial Wastes Disposal
Hydraulic Developments

11 Park Place, New York City

The J. G. White Engineering Corporation

Design—Construction
Reports—Appraisals

80 Broad Street, New York 4

James M. Caird

Established 1893

C. E. Clifton, H. A. Bennett
Chemists and Bacteriologist
WATER ANALYSIS
Tests of Filter Plants
Cannon Building, Troy, N. Y.

Keis & Holroyd

Consulting Engineers

Formerly Solomon & Keis
Since 1906
Water Supply, Sewage Disposal, Garbage & Refuse Incineration, Industrial buildings

Troy, N. Y. Ft. Lauderdale, Fla.

The F. A. Schneider Co.

Consulting Engineers

Commercial Buildings, Process Plants, Layouts & Design.

Box 310, Bucyrus, Ohio

The Austin Company

Design and Construction

Manufacturing and Process Plants
Airports & Air Transport Buildings
Railroad Terminals and Facilities
Power Plants—Industrial & Institutional
Industrial Office Buildings and Laboratories

Reports and Plant Location Surveys

New York CLEVELAND Los Angeles
Chicago Houston Oakland
Detroit Seattle

Havens and Emerson

W. L. Havens C. A. Emerson
A. A. Burger F. C. Tolles F. W. Jones
CONSULTING ENGINEERS
Water, Sewage, Garbage, Industrial Wastes, Valuations—Laboratories

Leader Bldg. Woolworth Bldg.
Cleveland 14 New York 7

Jones, Henry & Schoonmaker

(formerly Jones & Henry)

Consulting Sanitary Engineers

Water Works, Sewerage & Treatment
Waste Disposal
Security Building Toledo 4, Ohio

Benham Engineering Co.

ENGINEERS

Webster L. Benham
M. Am. Soc. C. E.
Water Supply & Purification, Sewerage, Sewage Disposal, Electric Light & Power, Roads, Drainage
Am. National Bldg., Oklahoma City, Okla.

Capitol Engineering Corporation

Engineers—Constructors—Management

Bridges Dams
Planning Airports
Sewage Systems Water Works
Design and Surveys Roads & Streets
Executive Offices Dillsburg, Penna.

Brookhart & Tyo, Inc.

Engineers

Highways
Industrial Buildings
Bridges and Structures
Design, Estimates, Reports

6th & Maclay Sts. Harrisburg, Pa.

Gannett Fleming Corddry & Carpenter, Inc.

ENGINEERS

Water Works, Sewage, Industrial Wastes & Garbage Disposal — Roads, Airports, Bridges & Flood Control, Town Planning, Appraisals, Investigations & Reports.

Scranton Pa. Pittsburgh, Pa.
Harrisburg, Pa. New York, N. Y.

Albright & Friel, Inc.

Consulting Engineers

Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators, Power Plants, Industrial Buildings, City Planning, Reports, Valuations, Laboratory.
1528 Walnut St., Philadelphia 2, Pa.

Day & Zimmermann, Inc.

Engineers

Designs, Construction, Valuations
Reports and Management
Public Utilities and Industrials
Philadelphia
New York Packard Building Chicago

Frederick H. Dechant

ENGINEER

Associated with Frederic R. Harris
Water Works, Industrial Wastes, Sewerage, Recovery Processes, Hydraulic Works, Steam, Hydro Gas Power Plants
Philadelphia Fidelity Phila. Trust Bldg.
New York 27 William St.

Cards are arranged alphabetically by States - cities - names

PROFESSIONAL SERVICES

Additional cards are to be found on preceding pages

Fridy - Gauker - Truscott & Fridy
Architects & Engineers
Water . Sewerage . Industrial Waste Incineration . Power & Distribution Airport . Building . Town Planning
1321 Arch Street . Philadelphia 7, Pa.

William A. Goff, Inc.
General Engineering and Consulting Services
Water, Sewerage, Refuse Incineration, Industrial Buildings, Power Plants, Airports, Town Planning, Plans, Supervision, Valuations, Reports.
Broad St. Station Bldg., Phila. 3, Pa.

Hunting, Larsen & Dunnells
Engineers
Industrial Plants—Structures
Bridges—Steel and Reinforced Concrete
Design and Supervision—Reports
1150 Century Bldg., Pittsburgh, Pa.

When you need a SPECIALIST in a hurry . . .

Engineering News-Record's Professional Service Section offers the quickest, most direct method of contacting consultants who may be available NOW.

Morris Knowles, Inc.
Engineers
Water Supply and Purification, Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.
Pittsburgh, Pa.

Gilbert Associates, Inc.
Engineers and Consultants
Design and Supervision of
Steam, Hydro, Water Supply, Sewage Disposal, Diesel Plants and Airports, Valuations, Laboratory
Reading, Pa. 412 Washington St.
New York 61 Broadway
Houston Oil & Gas Building
Washington, D. C. 1417 K St., N. W.

Michael Baker, Jr., Inc.
THE BAKER ENGINEERS
CIVIL ENGINEERS, PLANNERS, AND SURVEYORS.
MUNICIPAL ENGINEERS
Airport Design—Sewage Disposal Systems—Water Works Design and Operation—Cons. Sur.—Surveys & Maps.
Rochester, Pa. Jackson, Miss.

Lacy, Atherton, Wilson & Davis
Architects and Engineers
Hotel Sterling Building.
Wilkes-Barre, Pa.

J. E. Sirrine Company
Engineers
Design Construction
Industrial Plants Electric Power
Water Supply & Purification
Sewage Disposal Reports
Greenville, South Carolina

Sullivan and Hoebel
Railroad Consulting Service
Terminals, Relocations,
Grade Crossing Elimination,
City Planning Problems,
Industrial Tracks and Yards.
Reports — Plans — Specifications
613 Empire Bldg., Knoxville, Tenn.

Frank A. Busse
Consulting Engineer
Industrial Buildings, Viaducts, Bridges, Foundations, Harbor Works, River Barge Terminals, City Planning, Airports, Sewage Treatment.
669 Shrine Building, Memphis 3, Tenn.

Lockwood & Andrews
Consulting Engineers
Airports, Paving, Industrial Plants, Drainage & Sewerage, Site Locations, Soils & Foundations, Water Supply, Structures, Harbor Works, Valuations, Reports — Design — Supervision
Union Nat'l Bank Bldg., Houston, Tex.

Myers & Noyes & Associates
Consulting Engineers
Water Supply, Sewage, Flood Control, Shore Protection, Irrigation and Reclamation, Reports and Valuations
2204 Tower Petroleum Bldg., Dallas, Texas
320 Wilson Building
Corpus Christi, Texas

Lonnie Beirne Perrin
Estimating, Consulting Reports & Appraisals
Public Buildings-Bridges and Piers
R. F. D. 4 • Richmond, Virginia
Phone 5-2693

Chas. L. Hilborn, Jr.
Engineers - Contractors
Mining, Chemical and Processing Plants—Maintenance & Construction
Solving difficult time limits or unusual Problems of continued normal operation while under construction handicaps, A specialty.
501-513 Coal & Coke Bldg.,
Bluefield, W. Va.

Inspecting and Testing

Robert W. Hunt Co.
Inspecting and Testing Engineers
Inspection and Tests
of Materials
Supervision of Construction
for
Utility Plants,
Buildings, Bridges,
Machinery and Equipment
General Offices and Laboratories
175 West Jackson Boulevard, Chicago
New York — Pittsburgh — St. Louis

OFFICIAL PROPOSALS
(Continued from page 380)

Bids: April 15, 1949 (917)

Switch Bay Addition

TO
WEST WATER STREET POWER PLANT
ADVERTISEMENT FOR PROPOSALS
TAUNTON MUNICIPAL LIGHTING PLANT
TAUNTON, MASSACHUSETTS

Sealed bids for constructing "Superstructure, Building Services and Miscellaneous Electric Work" for an addition approximately 30 ft. by 90 ft. by 35 ft. high on the West Water Street Power Plant for a new switch bay and office facilities will be received by the Manager at his office in the Taunton Municipal Lighting Plant Building until 11:00 A. M. Eastern Standard Time Friday, April 15, 1949. The Contract Documents, including Specifications and Drawings, may be examined at the office of the Taunton Municipal Lighting Plant, Taunton, Massachusetts, and at the office of Jackson & Moreland, Engineers, 31 St. James Avenue, Boston, Massachusetts on and after February 25, 1949, every weekday except Saturdays between the hours of 9:00 A. M. and 4:00 P. M. and copies thereof may be obtained upon deposit of $30.00 for each set. If all the documents and drawings are returned in good condition, within five days after the opening of bids, the entire amount of deposit will be returned to the bidder.

Each bid must be accompanied by a certified check, for 5 per cent of the bid price, as bid security. No bid may be withdrawn within thirty calendar days after the date of opening thereof. Certified check will be returned to unsuccessful bidders at the expiration of the thirty-day period and to the successful bidder upon delivery of the performance bond.

A performance bond in an amount equal to 100 per cent of the contract price will be required. The right is reserved to waive any informalities in or to reject any or all bids, and to award the contract to any one of the contractors bidding on the work whose bid is deemed to be in the best interest of the Taunton Municipal Lighting Plant.

TAUNTON MUNICIPAL LIGHTING PLANT
BY C. A. OLIVER, MANAGER

OFFICIAL PROPOSALS

Bids: March 29, 1949 (904)

County Road Work

DELAWARE COUNTY HIGHWAY DEPARTMENT
Delhi, New York

Pursuant to the provisions of Article 6, Section 126, of the Highway Law, sealed proposals will be received by the County Superintendent of Highways, at the Delaware County Highway Office, Page Avenue, Delhi, New York, until two o'clock Eastern Standard Time, on Tuesday, March 29, 1949, for the construction of the following:

CONTRACT NO. 1 — Dunraven-New Kingston County Road, Project No. 46, 0.10 miles variable width of roadway. Bridge #6-1, superstructure abutments and approaches, grading and foundation course. Department Estimate, $52,990.00. Deposit required, $3,000.00.

Structural and reinforcing steel will be furnished by the County of Delaware without charge to the contractor, delivered at the bridge site. Quality and type of materials to be furnished will be tabulated on the contract drawings.

Minimum Wage Rate per hour for above work shall be as follows:
Labor $1.00

CONTRACT NO. 2 — East Masonville-Sidney Center County Road, Project No. 48, 0.02 miles. Bridge 35-1, superstructure, abutments and approaches, grading and foundation course. Department estimate, $15,514.00. Deposit required, $1,000.00.
Minimum Wage Rate per hour for above work shall be as follows:
Labor $1.30

Maps, plans, specifications and estimates may be seen and proposal forms obtained at the office of the County Superintendent of Highways, at Delhi, New York. Plans will be made for plans, specifications or for each set, or check payable to Delaware County Highway Department. No refund will be made for plans, specifications or proposal forms.

Special attention of bidders is called to General Information for Bidders in the proposal, specifications, and contract agreement. Proposals for each highway or contract must be submitted in a separate sealed envelope with the name and number of the project plainly endorsed on the outside of the envelope.

OFFICIAL PROPOSALS

Each proposal must be accompanied by cash, draft, or certified check, payable to the County Treasurer of the County of Delaware, for the sum as specified in the advertisement for proposals and the proposal itself for each project. The retention and disposal of such cash, draft or check by the County of Delaware shall conform with sub-division 2, Section 38, of the Highway Law, as amended. The successful bidder will be required to execute the contract and comply in all respects with Section 38 of the Highway Law as amended.
The right is reserved to reject any or all bids.

Malcolm MacPherson
County Superintendent of Highways

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Boise, Idaho, March 7, 1949. Sealed bids (Specifications No. R1-40) will be received at the office of the Bureau of Reclamation, Idaho Falls, Idaho, until 10 a.m., April 19, 1949, and will at that hour be opened, for furnishing labor and materials and performing all work for the construction of the Goshen to Palisades 115 and 44-kv transmission line, Palisades Project, Idaho. The line is to be approximately 52 miles long. Time allowed for completion will be 450 days. For particulars address Bureau of Reclamation, Idaho Falls, Idaho; Box 937, Boise, Idaho; Bldg. 1a, Denver Federal Center, Denver, Colorado; or Washington 25, D. C.
MICHAEL W. STRAUS, Commissioner.
(923)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2587) will be received by Bureau of Reclamation, Elverta, California, until 10 a.m., April 1, 1949, and then publicly opened for furnishing labor and performing all work for constructing approximately 8.85 miles of additional wood-pole line for the 230-kv Shasta-Tracy transmission line No. 1, Central Valley Project, California. The Government furnishes materials. Time allowed for completion will be 120 days. For particulars, address the Bureau of Reclamation, Elverta, California; or Building 1-A, Denver Federal Center, Denver, Colorado.
MICHAEL W. STRAUS, Commissioner.
(922)

ADVERTISERS INDEX

Acker Drill Co. 333
Adams Mfg. Co., J. D. 253
Albert Pipe Supply Co., Inc. 223
Alemite Div., Stewart Warner 190
Allied Steel Products Corp. 280
Allied Structural Steel Companies 61
Allis-Chalmers Mfg. Co. 48, 49, 274, 275
All Purpose Spreader Corp. 314
American Bitumuls Co. 301
American Brattice Cloth Corp. 313
American Bridge Co. 285
American Floor Surfacing Machine Co., The 293
American Hoist & Derrick Co. 339
American Lumber & Treating Co. 252
American Manganese Steel Div. of American Brake Shoe Co. 296
American Mutual Liability Insurance Co. 346, 347
American Steel Dredge Co., Inc. 333
American Steel & Wire Co. 172
American Trucking Assns. 120
American Zinc Institute 270
Anthony Co. 258
Arco Co., The 278
Atlantic Steel Corp. 328, 341
Atlas Powder Co. 20
Austin-Western Road Machinery Co. 38
Autolene Lubricants Co. 298
Automatic Sprinkler Corp. of Amer. 164
Badger Machine Co. 327
Bailey Meter Co. 341
Baker Mfg. Co. 225
Barber-Greene Co. 233
Barco Mfg. Co. 295
Barrett Div., Allied Chemical & Dye Corp. 286
Bates Co., Inc., Walter 254
Bay City Shovels, Inc. 8
Be-Ge Mfg. Co. 219
Belmont Iron Works 288
Belmont Radio Corp. 329
Bethlehem Foundry & Machine Co. 269
Bethlehem Steel Co. 22, 126
Blackhawk Mfg. Co. 307
Blaw-Knox Div., Blaw-Knox Co. 166
Blood Brothers Machine Co. 324
Boston Woven Hose & Rubber Co. 53
Briggs & Stratton Corp. 235
Browning Crane & Shovel Co. 340
Bruning Co., Inc., Charles 34
Brunson Instrument Co., Inc. 330
Bucyrus-Erie Co. 152
Buffalo Products, Inc. 283
Butler Bin Co. 343
Byers Co., A. M. 2nd Cover
Byron Jackson Co. 168
Caine Steel Co. 303
Carey Mfg. Co., Philip 208, 209
Caterpillar Tractor Co. 26, 27
Ceco Steel Products Corp. 318, 319
Cement Gun Co. 257
Century Geophysical Corp. 261
Chain Belt Co. 37
Chapman Valve Mfg. Co., The 118
Chicago Pneumatic Tool Co. 315
Chicago Pump Co. 117
Chrysler Corp., Industrial Engine Div. 194
Cleaver-Brooks Co. 289
Cleco Div., Reed Roller Bit Co. 302
Cleveland Trencher Co., The 54
Clyde Iron Works, Inc. 331
Commercial Shearing & Stamping Co. 338
Complete Mach. & Equip. Co., Inc. 338
Concrete Pipe Machinery Co. 154
Concrete Surfacing Machinery Co. 154
Concrete Termite Drill Co. 337
Construction Machinery Co. 140
Crocker-Wheeler Electric Mfg. Co. 23
Cummins Engine Co., Inc. 33
Detroit Diesel Engine Div., General Motors 240, 241
Dobbins Mfg. Co. 326
Domestic Engine & Pump Co. 230
Dorsey Trailers, Inc. 305
du Pont de Nemours & Co., Inc., E. I. 46
Eagle Crusher Co. 337
Earle Gear & Machine Co. 303
Economy Forms Corp. 181
Economy Pumps Inc. 316
Eichleay Engineering Corp. 184
Electric Storage Battery Co. The 24
Electric Tamper & Equip. Co. 317
Eppinger & Russell Co. 333
Erie Steel Construction Co. 206
Euclid Road Machry. Co. 10, 11
Faber, Inc., A. W. 2
Fairbanks-Morse & Co. 306
Fir-Tex Insulating Board Co. 294
Flexible Road Joint Machine Co. 340
Flinkote Co., The 5
Fort Pitt Bridge Wks. 176
Four Wheel Drive Auto Co. 227
Galion Iron Wks. & Mfg. Co., The 130
Gardner-Denver Co. 42
Gemmer Mfg. Co. 256
General Excavator Co., The 312
Gilson Screen Co. 304
Gledhill Road Machinery Co. 344
GMC Truck & Coach Div. General Motors 281
Golden-Anderson Valve Specialty Co. 178
Goodall Rubber Co. 237
Goodyear Tire & Rubber Co. 1
Gordon Smith & Co. 312
Grasselli Chemicals Dept., E. I. du Pont de Nemours 273
Griffin Wellpoint Corp. 282
Grinnell Co., Inc. 28
Gunite Concrete & Construction Company 264
Gunite Construction Corp. 288
Harnischfeger Corp. 29
Hauck Mfg. Co. 266
Haynes Products Co. 332
Heil Co., The 246, 247
Hendrick Mfg. Co. 257
Hendrix Mfg. Co. Inc. 200
Hetherington & Berner, Inc. 263
Homelite Corp. 182
Hudson-Rumsey Co., Inc. 336
Hypressure Jenny Div. Homestead Valve Mfg. Co. 332
Hyster Co. 40
Industrial Brownhoist Corp. 306
Ingersoll-Rand Co. Insert between pages 32 & 33
Inland Steel Co. 64
International Business Machines Corp. 349
International Harvester Co., Inc. 60
Irving Subway Grating Co. 270
Irvington Form & Tank Corp. 268
Ives & Sons, H. M. 326
Jaeger Machine Co., The 188
Jeffrey Mfg. Co. 186
Jenkins Bros. 45
Johns-Manville 260
Jones & Laughlin Steel Corp. 325
Joy Mfg. Co. 142
Kennedy Valve Mfg. Co. 279
Kershaw Co., Inc., Royce 218
Keuffel & Esser Co. 230, 250, 251
Kinnear Mfg. Co. 162
Kinney Mfg. Co. 326
Klemp Co., Wm. F. 308
Koh-I-Noor Pencil Co., Inc. 266
Koppers Co., The 231
Laclede Steel Co. 248
Lamson & Sessions Co. 35
LaPlant-Choate Mfg. Co. 62, 63
Lauson Co., The 216
Leschen & Sons Rope Co., A. 134
LeTourneau, Inc., R. G. 30, 31
Levinson Steel Co. 226
Lewis Bolt & Nut Co. 245
Lima Shovel & Crane Div., Lima-Hamilton Corp. 128
Lincoln Electric Co. 311
Lith-I-Bar Co. 334
Lock Joint Pipe Co. 36
M & H Valve & Fittings Co. 293
MacArthur Concrete Pile Corp. 280
Macomber, Inc. 175
Mahon Co., The R. C. 211
Malsbary Mfg. Co. 299
Manhattan Rubber Div. 300
Marion Metal Products Co. 288
Marlow Pumps, Inc. 309
Marmon-Herrington Co., Inc. 15
Master Builders Co. 3rd Cover
Master Vibrater Co. 224
Mayo, Robert S. 271
Medusa Portland Cement Co. 39
McCaffrey-Ruddock Tagline Corp. 226
McGraw-Hill Book Co. 336
McKiernan-Terry Corp. 32
Michigan Power Shovel Co. 217
Mine Safety Appliances Co. 262
Monsanto Chemical Co. 14
Moretrench Corp. 277
Morin Mfg. Co. 308
Morris Machine Works. 290
Motorola, Inc. 239
Mott Core Drilling Co. 294
Mueller Brass Co. 124
Murphy Diesel Co. 7
National Clay Pipe Mfrs. Assn. 335
National Gunite Corp. 282
National Tube Co. 25
Naylor Pipe Co. 292
Nelson Corp., The Herman 220
Nelson Iron Works, Inc., N. P. 291
Nelson Stud Welding Div., Morton Gregory Corp. 136
New Holland Mfg. Co. 138
New York Engineering Co. 287
Northwest Engineering Co. 3
Ohio Locomotive Crane Co., The 248
Oliver Corp., Cletrac Div. 59
Osgood Co., The 312
Owen Bucket Co., The 139
Owens-Corning Fiberglas Corp. 196
Pennsylvania Drilling Co. 299
Philadelphia Gear Works 144
Pioneer Engineering Works 12, 13
Pittsburgh-Des Moines Steel Co. 170
Pittsburgh Steel Products Co. 259
Plasteel Products Co. 228
Plymouth Locomotive Works, Div. Fate-Root-Heath Co. 224
Portland Cement Assoc. 122
Posey Iron Works 243
Prairie Schooner, Inc. 278
Pressure Concrete Co. 341
Quick-Way Truck Shovel Co. 249
Raybestos-Manhattan, Inc., Manhattan Rubber Div. 300
Raymond Concrete Pile Co. 16, 17
Ric-wiL Co. 9
Robertson Co., H. H. 66
Rockford Clutch Div., Borg-Warner Corp. 264
Rogers Bros. Corp. 222
Royal McShea 238
Russell, Burdsall & Ward Bolt & Nut Co. 150
Rust-Oleum Corp. 323
Ryerson & Son, Inc., Joseph T. 330
Sanymetal Products Co., Inc. 43
Sauerman Bros., Inc. 348
Seaman Motors, Inc. 212
Schramm, Inc. 204
Shotcrete Construction Co. 299
Simplex Valve & Meter Co. 284
Sisalkraft Co., The 282
S K F Industries 192
Skilsaw, Inc. 21
Smith Engineering Works 56
Smith Co., S. Morgan 148
Smooth Ceilings System Co. 216
Socony Vacuum Oil Co. 18, 19
Sonneborn Sons, Inc., L. 234
Southern Pine Assn. 263
Sparling, R. W. 302
Spencer, White & Prentis, Inc. 344
Sprague & Henwood, Inc. 264
Stancal Asphalt & Bitumuls Co. 301
Stang Corp., John W. 258
Stemco Corp. 221
Stow Mfg. Co. 313
Sweet's Catalog Service 220, 298, 310
Symons Clamp & Mfg. Co. 316
Taylor Forge & Pipe Works 55
Texas Co., The 4th Cover
Thermobloc Div., Prat-Daniel Corp. 273
Thew Shovel Co., The 37
Timber Structures, Inc. 332
Timken Roller Bearing Co., The 52
Tinney Drilling Co. 248
Torrington Co., The 236
Trackson Co. 6
Trinity Div., General Portland Cement Co. 322
Truscon Steel Co. 345
Tube Turns, Inc. 41
Tulsa Winch Div. of Vickers, Inc. 44
Turner Halsey Co. 215
Tweco Products Co. 266
Twin Disc Clutch Co. 244
Underpinning & Foundation Co., Inc. 327
Unit Crane & Shovel Corp. 146
U. S. Motor Corp. 238
U. S. Pipe & Foundry Co. 4
U. S. Steel Subsidiaries 25, 68, 172, 213, 285
U. S. Steel Supply Co. 213
Universal Atlas Cement Co. 68
Universal Form Clamp Co. 202
Universal Sewer Pipe Corp. 320
Upson-Walton Co., The 58
Vacuum Concrete, Inc. 324
Viber Co. 232
Vibro-Plus Co. 334
Vickers, Inc. 47
Victaulic Co. of America 297
Vulcan Iron Works 342
Wayne Crane Div., American Steel Dredge Co., Inc. 198
Western Concrete Pile Corp. 132
Western Foundation Co. 132
Whitcomb Locomotive Co. 267
White Co., David 242
Wico Electric Co. 214
Williams & Co., J. H. 294
Winslow Scale Co. 328
Wisconsin Motor Corp. 271
Wood Co., R. D. 255
Wood Mfg. Co. 265
Wooldridge Mfg. Co. 229
Yaun Dragline Bucket Co. 322
Yuba Mfg. Co. 272
Zurn Mfg. Co., J. A. 50, 51

PROFESSIONAL SERVICES. 381, 382, 383

SEARCHLIGHT SECTION

(Classified Advertising)

Employment and Other Services. 377, 378

Educational Services 378

Auction Notice 372

Equipment (Used or Surplus New) 354-376

ADVERTISERS INDEX 353

G. R. Ramel, Sales Manager — Howard Olsen, Business Manager

Sales Representatives—Fred G. Hudson, L. H. Hunt and H. L. Keeler, 520 N. Michigan Ave., *Chicago* 11; Ralph Dorland, 68 Post Street, *San Francisco* 4; J. L. Ballard and W. G. Payne, 330 W. 42nd St., *New York* 18; A. B. Cozzens, 17th and Sansom Sts., *Philadelphia* 3; E. E. Duff, Jr., Hanna Bldg., *Cleveland* 15; B. F. Horn, Penobscot Bldg., *Detroit* 26; W. E. Donnell, Continental Bldg., *St. Louis* 8; Charles McReynolds, 621 So. Hope St., *Los Angeles* 14; Ralph Maultsby, Rhodes-Haverty Bldg., *Atlanta* 3; J. H. Allen, Empire Bank Bldg., *Dallas* 1. Other sales offices—738-39 Oliver Bldg., *Pittsburgh*; 1427 Statler Bldg., *Boston* 16; National Press Bldg., *Washington*; Aldwych House, *London, England.*

Canadian National Exhibition Grandstand, Toronto, Ontario. Architects—Marani and Morris; Consulting Engineer—Gordon Wallace; Contractors — Pigott Construction Co., Ltd., all of Toronto, Ontario.

Minimized SHRINKAGE, *Great* DURABILITY WITH POZZOLITH CONCRETE

Minimum volume change and long life under severe weather conditions were important concrete requirements to be met in the construction of this Canadian National Exhibition grandstand. Pozzolith, cement dispersion; widely used in building stadia*, provided these requirements and the following *plus* advantages:

- EASY PLACEABILITY
- ASSURED STRENGTH
- WATERTIGHTNESS
- GOOD APPEARANCE

Authoritative methods for concrete design, specification and production are ACI (613-44) and ASTM (C94-47T) — both based on the water-cement ratio law. Pozzolith, also conforming with the water-cement ratio law, used with these methods produces the best, most economical results.

***Partial List of Stadia built with POZZOLITH CONCRETE**

University of Arizona Stadium
Tucson, Arizona

Orange Bowl, Miami, Fla.

Michigan State College Stadium
E. Lansing, Michigan

Stadium Addition
Collingswood, N. J.

Stadium, Tiffin, Ohio

Allentown School Stadium
Allentown, Pa.

Hershey Stadium
Hershey, Pa.

University of Texas Stadium
Austin, Texas

Cotton Bowl, Dallas, Texas

Stadium and Bull Ring
Sports City, Mexico

Stadium, Havana, Cuba

Jai Alai Sports Stadium
Manila, P. I.

the MASTER BUILDERS Co.

CLEVELAND 3, OHIO — TORONTO, ONTARIO

All around the country

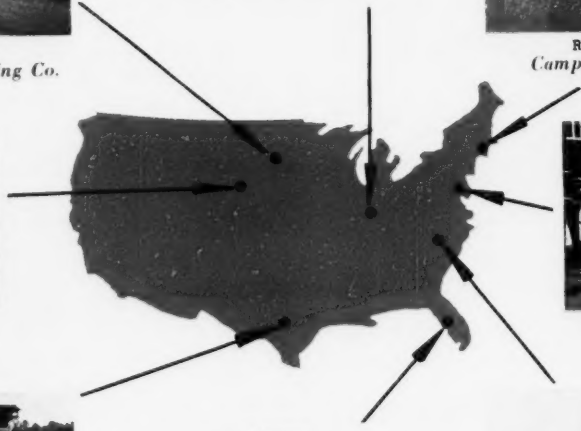
representative contractors like these pave with Texaco Asphalt

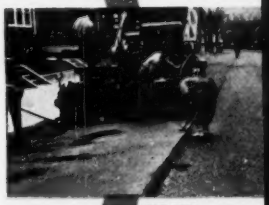
SOUTH DAKOTA
Northwestern Engineering Co.

INDIANA
Grady Brothers, Inc.

RHODE ISLAND
Campanella & Cardi

WYOMING
Peter Kiewit Sons' Company





NEW JERSEY
E. E. Barrett

TEXAS
Collins Construction Co.

FLORIDA
Duval Engineering & Contracting Co.

NORTH CAROLINA
Sam Finley, Inc.

Here are eight representative paving contractors, whose projects are scattered across the United States from New England to the Rockies.

In choosing their materials for the important projects pictured here, all eight of these contractors elected to use Texaco Asphalt. Evidence such as this of the widespread acceptance of these materials offers the best proof of the dependable performance and uniformly high quality of Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils. Into the refining of these products from carefully selected crudes goes Texaco's 45 years of experience in supplying the asphalt requirements of America's road builders.

Two helpful booklets, which describe all types of asphalt construction for streets, highways and airports, will be forwarded without charge to those interested. Write our nearest office.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17
Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19

TEXACO

TEXACO ASPHALT